"A STUDY TO ASSESS THE EFFECTIVENESS OF LOCAL COLD APPLICATION ON PAIN RESPONSE DURING INTRAVENOUS CANNULA INSERTION AMONG CHILDREN (6-12YEARS) ADMITTED IN GOVERNMENT DISTRICT HEAD QUARTERS HOSPITAL, NAMAKKAL, TAMILNADU."

By

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(Affiliated to the Tamil Nadu Dr.M.G.R.Medical University,Chennai-32)

ELAYAMPALAYAM, TIRUCHENGODU,PIN-637205
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CERTIFICATE

This is to certify that, this thesis, **"A STUDY TO ASSESS THE EFFECTIVENESS OF LOCAL COLD APPLICATION ON PAIN RESPONSE DURING INTRAVENOUS CANNULA INSERTION AMONG CHILDREN (6-12YEARS) ADMITTED IN GOVERNMENT DISTRICT HEAD QUARTERS HOSPITAL, NAMAKKAL, TAMILNADU."** Submitted by **Mrs. ASWATHI VENUGOPAL, M.Sc. Nursing (October 2013-2015 batch)**, Vivekanandha College Of Nursing in partial fulfillment of the requirement of the degree of Master of Science (Nursing) from The Tamilnadu Dr. M. G. R. Medical University is her original work carried out under our guidance.

This thesis or any part of it has not been previously submitted for any other degree or diploma.

Prof. Mrs. R. NIRMALA KRISHNAN, MS.c(N), (Ph.D)

PRINCIPAL

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DECLARATION

I hereby declare that this thesis entitled **"A STUDY TO ASSESS THE EFFECTIVENESS OF LOCAL COLD APPLICATION ON PAIN RESPONSE DURING INTRAVENOUS CANNULA INSERTION AMONG CHILDREN (6-12YEARS) ADMITTED IN GOVERNMENT DISTRICT HEAD QUARTERS HOSPITAL, NAMAKKAL, TAMILNADU",** is the outcome of the original research work under taken and carried out by me under the guidance and direct supervision of research advisor, **Prof. Mrs. R. Nirmala Krishnan, M.Sc (N), (Ph.D)** and clinical specialty guide **Mrs. P. Senthamarai, M.Sc(N)**, Department Of Child Health Nursing, Vivekanandha College Of Nursing, (Sponsored by Angammal Educational Trust), Elayampalayam, Tiruchengode, Namakkal District.

I also declare that, the material of this thesis has not formed in any way the basis for award of any other degree, Diploma or Associate fellowship previously of the Tamilnadu Dr. M. G. R Medical University.

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Mrs. ASWATHI VENUOPAL

ABSTRACT

ABSTRACT

"A study to assess the effectiveness of local cold application on pain response during intravenous cannula insertion among children (6-12years) admitted in Government District Headquarters Hospital, Namakkal, Tamilnadu."

The present study, to evaluate the effectiveness of local cold application on pain response during intravenous cannula insertion among children (6-12 years) admitted in Government District Headquarters Hospital, Namakkal, was conducted by **Mrs. AswathiVenugopal** in partial fulfillment of the requirement for the Degree of Master of Science (Nursing) during the year 2013-2015.

OBJECTIVES OF THE STUDY ARE:

1. To assess the level of pain during intra venous cannula insertion among children in control group.
2. To evaluate the effectiveness of local cold application on pain response during intra venous cannula insertion among the children in the experimental group.
3. To compare the level of pain scores between experimental and control group.
4. To find out the association between pain level and selected demographic variables like age, sex, weight etc in the experimental group.

The conceptual frame work adopted for this study was Ottawa model of research use, which addresses the implementation of existing research knowledge.

The review of literature helped the investigator to develop conceptual frame work, determine the methodology for the study, and plan for analysis of the data in the most effective and efficient way.

The research approach adopted for the study was nonrandomized control group posttest only design. True experiments are the powerful tool for testing hypothesis of cause and effect relationship between variables.

In the present study the investigator test the relationship between independent and dependent variables, the independent variable is local cold application and dependent variable is pain response of the children during intravenous cannula insertion.

The study was conducted in Government District Headquarters Hospital, Namakkal, Tamilnadu. Purposive sampling was used to select the sample. After that samples were equally divided as experimental and control group. The samples consisted of 30 experimental and 30 control group children .

The tool used for data collection was semi structured interview schedule. It has two sections. Section I consist of 6 items of socio demographic variables. Section II consists of **REVISED FLACC BEHAVIOR PAIN SCALE** to assess the pain response of children during intravenous cannula insertion.The reliability of the of the tool was established by inter rater reliability. Inter rater reliability coefficient was 0.92.

The collected data were analyzed by using descriptive and inferential statistics in terms of frequencies, percentage, mean, standard deviation and chi square analysis.

MAJOR FINDINGS OF THE STUDY

Major findings of the study are summarized as follows.

I. Findings related to socio demographic variables.

- Nearly above half percentage 31(51.67%) of sample belongs to the age group of 6-8 years.
- About 27(45%) children belongs to the category upto 20 kilograms.
- Most of the children 34(56.67%) were females.

- About 31(51.67%) children had history of intravenous cannula insertion in previous hospitalization.
- Majority of children 55(91.6%) did not receive any pain relief measure before intravenous cannula insertion in previous hospitalization.
- About 24(40%) children were cannulated with 24G cannula.

II. Analysis of effectiveness of local cold application on pain relief during intravenous cannula insertion.

1. Assessment of post test level of pain score in experimental and control group.

The study revealed that in experimental group among 30 children, 10 (33.33%) were experienced mild pain, 20 (66.67%) were experienced moderate pain and none of them experienced severe pain. But in control group among 30, majority of children 25 (83.33%) experienced severe pain, 5 (16.67%) experienced moderate pain but none of them experienced mild pain.

2. Comparison of post test level of pain between experimental and control group.

The study revealed that in experimental group the mean pain score is 4.03, mean percentage is 40.33% and standard deviation is 0.95. In control group the mean pain score is 7.33, mean percentage is 73.3% and standard deviation is 0.98. The t value is 13.04 (p =0 .05, 58 df, t= 1.96) which is statistically significant.

III. Association between post test pain score in the experimental group with selected socio demographic variables.

Chi-square test was used to find out the association between the socio demographic variables and post test level of pain. It was concluded that age, weight, sex, history of intravenous cannula insertion in previous hospitalization, and size of the cannula were significant at 5% level, but history of use of any pain relief measure before intravenous cannula insertion was not significant.

In the light of the above study the following recommendations are put forth.

- A similar study can be conducted for a large sample to draw more conclusive generalization.
- A comparative study can be conducted with two different age groups.
- In nursing curriculum give more emphasize for Nonpharmacological methods of pain relief and nursing students can use the technique before any invasive procedures.
- A similar study can be conducted for adult patients.
- A study can be conducted by using local cold application as a pain relief measure before arteriovenous fistula formation in dialysis patients.
- A similar study can be conducted by using local cold application as a pain relief measure before giving immunizations in children.
- A study can be undertaken to find out the roles of nurses to decrease the pain of children during hospitalization.
- A study can be conducted to find out the long term effects of painful procedures in children.

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CHAPTER I

INTRODUCTION

Every child you encounter is a divine appointment."

Wess Stafford

Children are the supreme assets of our country. India is home to the largest child population in the world. “The development of children is the first priority on the Country’s development Agenda, not because they are the most vulnerable but because they are our supreme assets and also the future human resource of our country”.

Every child is an individual and should never be considered a typical boy or girl, one unit of a group who are all alike. Each child has his own rate of growth,but the patterns of growth shows less variability. Although growth and development – physical, mental, social, emotional, and spiritual-proceed at different rates,they are also interrelated in the majority of children that the result is a progressive development of the whole child, from infancy to childhood. **(Marlow, 1965).**

During middle childhood (6-12 years), child increasingly separate from parents and seek acceptance from teachers and other adults and from peers. Self-esteem become a central issue,as the children develop the cognitive ability to consider at the same time their own self evaluations and their perception of how others see them. For the first time, they are judged according to their ability to produce socially valued outputs. This focus on accomplishment leads to the central psychosocial issue of this period. Pressure to confirm the style and ideals of the group can be intense and children who are different, physically or intellectually are at risk for social isolation and depression.**(Richard E. Behrman et al., 2004).**

The middle childhood years are a fascinating period of time along the journey toward maturity. But this period had always remained as a neglected area of study; with most studies concentrating on the bewitching preschoolers or baffling adolescents. The middle childhood period involves a number of stresses and consequent problems of adjustment because of tremendous amount of development taking place in all the emotional ,cognitive and adjustment problems of a child is to made a developmental framework. The school and peer group experience, sex roles and the development of mortality all become crucial during this stage and the maladjustment long term complications. **(William, 2010).**

Hospitalization plays an important role in the care of children's health. However hospitalization have some unfavorable influences on the child,which needs to be recognized and preferably excluded. The primary goal is to minimize the hospitalization is to minimum and when it is impossible, to provide the least traumatizing treatment procedures during hospital stay. After the first children's hospital founded at the beginning of the 19th century,numerous attempts were made to improve hospital conditions. Finally at the end of 20thcentury true efforts were invested to minimize the unfavorable impact of hospitalization. The latest discoveries in the surgeries and medical treatment do not take into account the entire range of children's needs; rather there is a tendency of directing attention only to the body and the disease, while ignoring the medical treatment effects on the child's emotions now and in the future. Therefore many children experience psychological trauma,which can lead to permanent consequences.**(MajaCrnkovic, 2009).**

Each year, millions of children admittedin the hospitals require some form of vascular access as a critical component of their medical care. Vascular access devices are used for the hemodynamic monitoring of the patient, administration of medications, fluids, nutritional solutions and blood products.**(Ruchisaini et al., 2011).**

Venipuncture is one of the commonly experienced procedure by hospitalized children.It has been estimated that as many as one in three hospitalized children have a peripheral venous catheter in situ at any given time. **(Reilly, 2007).**

Venipuncture is a process of puncturing a peripheral vein with a flexible tube, containing a needle to gain access to the venous system for administering fluids and medications using aseptic technique. **(Navjot Kiran, 2013).**

Pain is highly unpleasant and very personal sensation that cannot be shared with others. "It can be defined as an unpleasant sensory and emotional experience associated with actual or potential damage or described in terms of such damage". **(International Association for the study of pain, 1994)**

Pain in children is multidimensional and subjective. It is affected by the type and duration of pain, developmental level, emotional status, previous pain experience,culture and ethnicity, personality type,sex,genetic variations ,and parental response to the child's pain. These factors will be taken into consideration when assessing the infant or child in pain. **(Bisho et al, 2002).**

Different ethnic groups may possess varying levels of neurotransmitters or respond to medications differently. These would influence how the person transmits, inhibits or feel pain. **(Hu Zhang .C, 1991)**

Although pain can be beneficial in warning the child of injury, the effect of pain are generally deleterious. Pain in children of any age evokes negative physiologic, metabolic and behavioral responses. These include increased heart rate, respiratory rate, blood pressure and increased secretion of catecholamines, glucagon and corticosteroids. Pain leads to anorexia causing poor nutritional intake and delayed wound healing, impaired mobility, sleep disturbances, withdrawal, irritability and developmental regression. Consequences of theseresponses of untreated pain affects the length of convalescence and hospitalization. **(Vicky .R. Bowden et al., 1998).**

School aged children begin to have the ability to communicate pain in more abstract terms that adults use. They are able to communicate effectively concerning their pain, and generate excellent descriptions of pain such as squeezing stabbing and burning. **(Ross and Ross, 1984)**

School aged children are beginning to understand need for painful procedures .They fear body harm and aware about death. They may appear to overact to illness or injury. As in all age groups the school aged child remembers previous pain experiences which will affect the child's response. Non verbal clues are also important in school aged children. **(Susan et al., 2001).**

School aged children fear physical harm and their reactions are often based more on their fear than on pain experienced. Pain may also be related to loss of control over one's body activities. School aged children are capable of correctly identify the source of discomfort even if they cannot accurately verbalize the intensity or type of pain. The school aged children experiencing pain benefits from knowing what will happen and talking about fears related to procedures. **(Eugenia.H.Warchiter et al., 2003).**

Potential negative repercussions of untreated pediatric pain include heightened distress at subsequent procedures, avoidance of medical care, missed vaccinations, and not engaging in blood donation as an adult. Needle pain relief might address the issues of needle anxiety facilitate the medical procedure and heighten the child satisfaction. It is critical, however the pain relief treatment may be not only effective, but also sufficiently practical to be used in busy medical setting. **(Baxter et al., 2011).**

Nonpharmacological procedures or technique to reduce procedure related pain and avoid potential drug's side effects are generally less expensive and can be performed independently by a nurse. It is considered that these therapies help the standard pharmacological treatment in pain management. While medical drugs are being used for treating the somatic (physiological and emotional) dimension of the pain, non-pharmacological therapies aim to treat the affective, cognitive, behavioral and socio-cultural dimensions of the pain. **(Yavuz, 2010)**.

Number of non pharmacological techniques such as distraction, relaxation, guided imagery and cutaneous stimulation provides coping strategies that may help to reduce pain perception, make pain more tolerable, decrease anxiety and enhance the effectiveness of analgesics. Among these measures, proper use of cutaneous stimulation can reduce pain perception. Cutaneous stimulation of afferent fibers such as those of skin seems to excert an inhibitory action in some areas of central nervous system which reduces pain. Methods of providing stimulation include heat, cold, pressure, massage with powderstimulation such as an ice bag on opposite side may also be helpful.**(Eugenia .H. Warchiter et al., 2003).**

Cold treatment consists of applying a cooling material or device on any part of the body. Cold treatment which is a simple and cheap treatment method has an important place in non-drug therapies for pain management. Cold gel packages and ice packages commonly used in the application should be used by placing a tin towel/gauze between the skin and the package for being able to withstand extreme cold feeling during the first contact of the package, for having a homogenous cooling. **(Yavuz, 2006).**

The technique of cutaneous stimulation involves stimulating the skin to control pain. It is theorized that this technique provides relief by stimulating the nerve fibers that send signals to the dorsal horn of the spinal cord to "close the gate". The main advantages of these therapies is that many techniques are easy for the nurse to implement, and easy to teach the child and family to perform. **(Lois white, 2001).**

Nurses working in children's ward assisting for painful procedures carryout efficient safe and quick action in decreasing pain or discomfort and they are following traditional methods of mothering such as use of tactile stimuli, holding, stroking, verbal stimuli and making smoothening sounds etc.The ultimate aim of nursing is to keep the children free from pain and

other stressful stimuli as far as possible by advocating minimal handling protocol giving comfort by administering non pharmacological interventions.

NEED FOR THE STUDY

"The best way to make children good is to make them happy."

— Oscar Wilde

Worldwide children represent a higher proportion of the population, with the children younger than 15 accounting for 1.8billion (28%) of the world's 6.4billion persons. **(Kliegman et al ., 2007).**

At 400 million, India is home to the world's largest child population. More than 50 per cent of the children are malnourished and almost 50 per cent of them do not attend school. **(Hindu, 2014).**

About 30% of children are hospitalized at least once during childhood and about 5% have multiple hospital admissions. **(Nelson, 2007).**

Children are major receivers of health care. In India about 35% of total population are children below 15 years old. Children fall in the most important age group in all societies. **(Dutta P, 2009).**

Each year in the United States approximately five million children experience some form oftraumatic experience. Millions more are living in the terrorizing atmosphere of domestic violence. Natural disasters, car accidents, life-threatening medical conditions, painful procedures, exposure to community violence – all can have traumatic impact on the child. By the time a child reaches the age of eighteen, the probability that any child will have been touched directly by interpersonal or community violence is approximately one in four. Traumatic experiences can have a devastating impact on the child, altering their physical, emotional, cognitive and social development. In turn, the impact on the child has profound implications for their family, community and, ultimately, us all. **(Bruce D. Perry, 2003)**

Children are the future of our society and special gifts to the world. Children need accessible, continuous, comprehensive, coordinated and compassionate care that focuses on their changing physical and emotional needs. **(kyle T, 2008)**

Illness and hospitalization expose children to unfamiliar and unpleasant feelings. Children may undergo a wide range of interventions in hospitals, many of which can be stressful, traumatic and painful. **(Movahedi A F et al., 2006)**

Hospitalized children undergo multiple painful procedures; venipuncture, intravenous cannulation, capillary stick, and injections are most commonly performed. Over the past 10 to 15 years, the findings of several epidemiological surveys have consistently emphasized that a significant proportion (49% to 64%) of hospitalized children receive inadequate pain management despite the increase in knowledge and available treatments .In addition to undue pain and suffering, stress associated with painful procedures can influence physiological, social and cognitive outcomes and have emotional and psychological implications for children and families. **(Jennifer Stinson et al., 2008)**

Desiree Lie, (2002) conducted a study on minimizing needle pain in children. Survey suggested that venipuncture is associated with considerable distress among children. Between 34% and 64% of children experience stress on pain from the procedure. The study suggested that 50% of children report needle stick experiences as unpleasant and painful, which causes subsequent high levels of anticipatory fear and distress. The fear of pain and needle phobia in children can lead to poor health consequences, including medical treatment.

The average time requirement for peripheral intravenous cannulation is reported at 2.5 to 13 minutes, with difficult IV access requiring as much as 30 minutes. **(Leidel et al., 2009)**

The number of attempts at intravenous cannulation for the pediatric patient ranges from 1 to 10 attempts.The conventional peripheral intravenous cannulation method involves localizing the target vessel through palpation and identification of nearby anatomic landmarks. This procedure is often difficult for the health care provider and painful for the child. First-attempt success rates for peripheral intravenous cannulation of adults range from 76% to 91%. In pediatric populations, from 53.3% to 75.6%. When multiple cannulation attempts are required, children experience increased pain and anxiety. The additional time spent trying to secure intravenous

access increases the demands placed on health care providers, increases costs, and may lengthen the child's emergency department stay. When peripheral intravenous cannulation attempts with the conventional method fail altogether, central venous cannulation, venous cutdown, or intraosseous needle placement is often required. These procedures are more painful and time consuming and have a higher risk of complications. Identifying methods that improve peripheral intravenous cannulation is important to the children, health care workers, and hospital administrators**(Katsogridakis et al., 2008)**

The degree of pain during common medical procedures is less than during severe illness and injuries, millions of children experience these procedures which cause considerable distress. Children requiring needle sticks view this procedure as frightening and a significant source of pain. **(Movahedi A F et al., 2006)**

Relief from pain and suffering is a basic human right, no matter what the age, level of cognitive development or ability to communicate. Although children'spain is still often under recognized around the world, in recent years there have been enormous advances in our understanding of pain in childhood. Today in the 21stcentury it seems incredible to think that less than 20years ago there was considerable debate about whether newborns were capable of feeling pain and whether the benefits of potent analgesics over weighted their risk in young infants. Since that time the study of developmental neurology has left little doubt that even the youngest and most premature infant is capable of pain perception.**(Neil Melntosh et al., 2008)**

Howard, (2003) notes studies have discovered that pain experiences in early life may have long term consequences. He cites evidence that there may be long term behavioral changes, that extend far beyond what is considered normal recovery after painful event. Important determinants of long term outcomes of pain includes timing ,degree of injury and analgesics used. There are also concerns for older children in relation to their memories of painful experience.Long term consequences of pain may include the child's later reaction to painful events and avoidance of later health care intervention. **(Von Baeyer et al., 2004)**

Past experience with pain has an impact on present behavior. When previous situations have resulted in successful coping behaviors, the child is more likely to feel in control and respond in an adaptive manner. Fear or anxiety may intensify the perception of pain, especially if previous

experiences have been negative. Pain perception may also be intensified if the child has not had the experience before and has no coping skills to call up on. **(Talbot et al., 2009)**

The new pain management standards from the Joint Commission On Accreditation of Health Care Organization (JCAHO) and the Canadian Pain Management Society(CPS) position statement on pain relief. Both emphasize that patients have the right to get best pain relief possible and that measures to prevent or reduce acute pain as a priority. **(Joycee. M .Black, 2011)**

The American Academy of Pediatrics and American Pain Society addressed the need for appropriate pain management in children in the joint statement presented in 2001. They noted that despite of comprehensive research, anecdotal experience and ample knowledge from the past 10-15 years, the assessment and treatment of pain in children frequently remain inadequate. **(American Academy Of Pediatrics, 2001)**

Pain is a subjective experience. Thus self-report of pain is a critical component of pain assessment. Subjective reports of pain may include verbalization or nonverbal reports such as coloring the parts of the body that hurt on a body outline tool. Children in pain have consistently reported that needles and shots are what they fear the most.**(Broome, 1985)**

Intravenous procedures causes moderate to severe pain in most of the children and also in adults. Most of the pediatric unit will have some method to reduce pain to a great extent by using various non pharmacological methods. Among that local cold application comes under cutaneous stimulation and is very effective and practicable before IV procedure. Children early relieve from pain with various non pharmacological methods especially with cutaneous stimulation. With cold application, pain related to intravenous cannulation and intravenous infusion will reduce as a result of numbness and it also reduces the pain transmission ability of pain fibers. Application of cold is thought to slow noxious impulse conduction and cause vasoconstriction, which may also reduce release of irritating substance at the site.**(Ernst, 1994)**

In pain associated with trauma, cold may reduce swelling and muscle spasms. A cold pack should wrapped well enough so that it feels cool but is nit uncomfortable. Ice massage is

effective for injection, musculoskeletal pain, headaches, toothaches or brief painful procedures. **(Vicky .R. Bowden et al., 2010)**

During the literature review the investigator found that studies in these areas are rare, especially in India. Evidence suggests that cold therapy relieve more pain than heat therapy, works faster than heat, and provides longer lasting pain relief than heat .The investigator felt that it is cost effective and less time is needed for action.

Sukhjitkaur et al., (2013) conducted a study at PGIMER, Chandigarh conducted an experimental study to assess the effectiveness of ice pack application at the site prior to the venipuncture on intensity of the pain. 100 subjects were selected by purposive sampling. 50 subjects each in experimental and control were assigned. Pain was assessed in both groups using FLACC behavior pain assessment scale. There was a significantly lesser percent of subjects in the experimental group experienced moderate and severe pain as compared to control group. So it is concluded that use of ice pack at the site prior to the venipuncture is safe and cheap to decrease the pain among children undergoing venipuncture. This study strongly recommends that ice pack should be incorporated as one of the pain management modality in daily practice.

Ali FakhrMovahedi et al., (2012) conducted a quasi experimental study at Semnan University, Iran to determine the effect of local refrigeration prior to the venipuncture on pain related response in school age children. The subjects were 80 children of age 6- 12 years selected by purposive sampling. The subjects were divided into test and control group. The measurement of behavior response was done by CHEOPS (Children's Hospital Of Eastern Ontario Pain Scale) scale. The results of this study suggests that the use of local refrigeration prior to the venipuncture can be considered as an easy and effective intervention of reducing venipuncture related pain.

Despite the increasing knowledge regarding safe and effective pain management in children as well as wide spread anecdotal experience, this information has not been generally or effectively applied to routine pediatric clinical practice. It is well documented that the youngest children have the greatest probability of receiving insufficient pain medications. It is also evident

that over all pain medication action in pediatrics lags behind that of adult patients. **(Mac Caffery and Pasero, 2005)**

The behaviors of many health care professionals including nurses including nurses do not always correspond with the attitudes and beliefs they report concerning pain assessment and management. **(Simons and Roberson, 2002)**

Obstacles to appropriate pain management in children includes knowledge deficits ,lack of confidence regarding pain management ,accurate pain assessment,awareness of pain management interventions,lack of communication between patients and parents , personnel attitudes and beliefs about pain.**(Von Hulle and Denys, 2004)**

Nursing and medicine both contribute to problem of suboptimal pain management. Physicians tend to order inadequate amounts and occasionally inaccurate doses of pain medications. Nurses tends to under medicate by not administering doses or administer at largest intervals. Many health care professionals do not recognize subtle pain behaviors in children such as lying quietly, poor appetite, clinging to parents,and disturbed sleep patterns. These children are not treated for pain.**(Gadish et al., 1988)**

The investigator during her clinical experience felt that children are often exposed to painful procedures on admission to hospital. One such common procedure is intravenous procedure which is very painful to children. Thus, the investigator is interested to emphasize on the measure of pain relief by cold application to reduce pain among children during intravenous procedures. With this intention, the investigator has taken steps to find the effectiveness of local cold application on pain response during intravenous procedures.Considering all the above mentioned facts the researcher found it very essential to conduct this study. Hence the particular topic was selected for the research.

STATEMENT OF THE PROBLEM

“A study to assess the effectiveness of local cold application on pain response during intravenous cannula insertion among children (6-12years) admitted in Government District Headquarters Hospital, Namakkal, Tamilnadu.”

OBJECTIVES OF THE STUDY

1. To assess the level of pain during intra venous cannula insertion among children in control group.
2. To evaluate the effectiveness of local cold application on pain response during intra venous cannula insertion among the children in the experimental group.
3. To compare the level of pain scores between experimental and control group.
4. To find out the association between pain level and selected demographic variables like age, sex, weight etc in the experimental group.

OPERATIONAL DEFINITIONS

1. Assess

Statistical measurement of the pain of the children (6-12 years), during intravenous cannula insertion as observed from the scores based on **revised FLACC behavior** pain scale.

2. Effectiveness

Effectiveness refers to the significant reduction in pain as determined by significant difference in pain scores between experimental and control group.

3. Local cold application

In this study local cold application refers to the application of ice cube (5×5 cm) with in a plastic cover, covered with gauze and applied on the site of intravenous cannulation for a period of 3 minute prior to intravenous cannula insertion.

4. Pain

Pain is an unpleasant sensation of children (6-12years), caused by intravenous cannula insertion and measured by investigator using **revised FLACC behavior** pain scale.

5. Response.

Pain response is the response of children to intravenous cannula insertion based on the scorings of criterias like face, legs, activity, cry and consolability in **revised FLACC behavior** pain scale.

6. Children:

Children who belongs to the age group of 6-12 years, admitted in District GovernmentHeadquarters hospital, Namakkal, and are undergoing intravenous cannula insertion first time after their admission.

7. Intravenous Cannula

Intravenous cannula is a small flexible plastic tube which is usually inserted in the veins in the lower arm for administration of injections and fluids.

ASSUMPTIONS

- Cold decreases the sensitivity of tissues and create a state of numbness.
- Ice pack application before intra venous cannula insertion will help to reduce the pain of children in experimental group.
- Selected demographic variables like, age, sex, weight etc, may influence the effectiveness of ice pack application for pain reduction before intra venous cannula insertion.

HYPOTHESIS

H_1: There will be a significant difference between the mean pain score of children in the experimental and control group

H_2: There will be significant association between pain reduction and selected demographic variables like age, sex, weight etc in the experimental group.

DELIMITATIONS

The study was delimited to,

- 60 children who are admitted in Government District Headquaters Hospital, Namakkal.
- Children who are undergoing intravenous cannulation first time after their admission.
- Children who need single attempt for successful intravenous cannulation.
- Children who are present during the time of data collection.
- Children who are willing to participate in the study.

CONCEPTUAL FRAMEWORK

It presents logically constructed concepts to provide general explanation of the relationship between the concepts to provide general explanation of the relationship between the concepts of the research study, without using a single existing theory. Conceptual frame works are usually constructed by using researcher's own experience, previous research findings or concepts of several theories or models.

Conceptual frame work is an interrelated concept that are assembled together in some scheme by virtue of their relevance to a common thing. This is a device that helps to stimulate the research and the extension by providing both direction and impetus. **(Polit and Hungler, 1999)**

The present study was aimed to evaluate the effectiveness of local cold application on pain response during intra venous cannula insertion among children admitted in selected hospital at Namakkal.

The conceptual framework of the study is based on **Ottawa Model of Research Use** (1998).

OTTAWA MODEL OF EVIDENCE BASED PRACTICE IN RESEARCH USE (1998).

The Ottawa Model of Research Use (OMRU) is an interactive model developed by Logan and Graham (1998). The feasibility and effectiveness of using The Ottawa Model of Research Use in actual practice contexts was supported by findings from a number of studies. **(Pomey , 2009).**

The Ottawa Model of Research Use views research use as a dynamic process of interconnected decisions and actions by different individuals relating to each of the model elements. This model addresses the implementation of existing research knowledge. **(Logan & Graham, 2010)**

The Ottawa Model of Research Use relies on the process of assessing, monitoring, and evaluating each element before, during, and after the decision to implement an innovation. Barrier assessments must be conducted on the innovation, the potential adopters, and the practice environment to identify factors that could hinder or support the uptake of the innovation. The implementation plan is then selected and tailored to overcome the barriers and enhance the supports identified. Introduction of the implementation plan is monitored to ensure that the potential adopters learn about the innovation and what is expected of them. The monitoring is ongoing to help determine whether any change in the current implementation or a new implementation plan is required. Finally, the implementation outcomes are evaluated to determine whether the innovation is producing the intended effect or any unintended consequences.**(Graham and Logan, 2004)**

1. Assessment and specification of innovation.

- Preparation of **REVISED FLACC BEHAVIOR PAIN SCALE** to assess the pain response of children during intravenous cannula insertion.
- Assessment of requirement of innovation.

2. Evidence based innovation.

- Assessment of barriers.
- Planned to conduct local cold application as nonpharmacological pain relief measure.

3. Administration and monitoring of innovation.

- Administered local cold application 3minutes prior to the insertion of intravenous cannula.
- Assessed the pain response of the children in the experimental and control group by using **REVISED FLACC BEHAVIOR PAIN SCALE.**

4. Evaluation of outcomes.

- The children in the experimental group feels less pain during intravenous cannulation.

- Improved cooperation from the children in the experimental group during intravenous cannulation.
- Children in the control group experienced a significantly higher pain during intravenous cannulation than children in the experimental group.

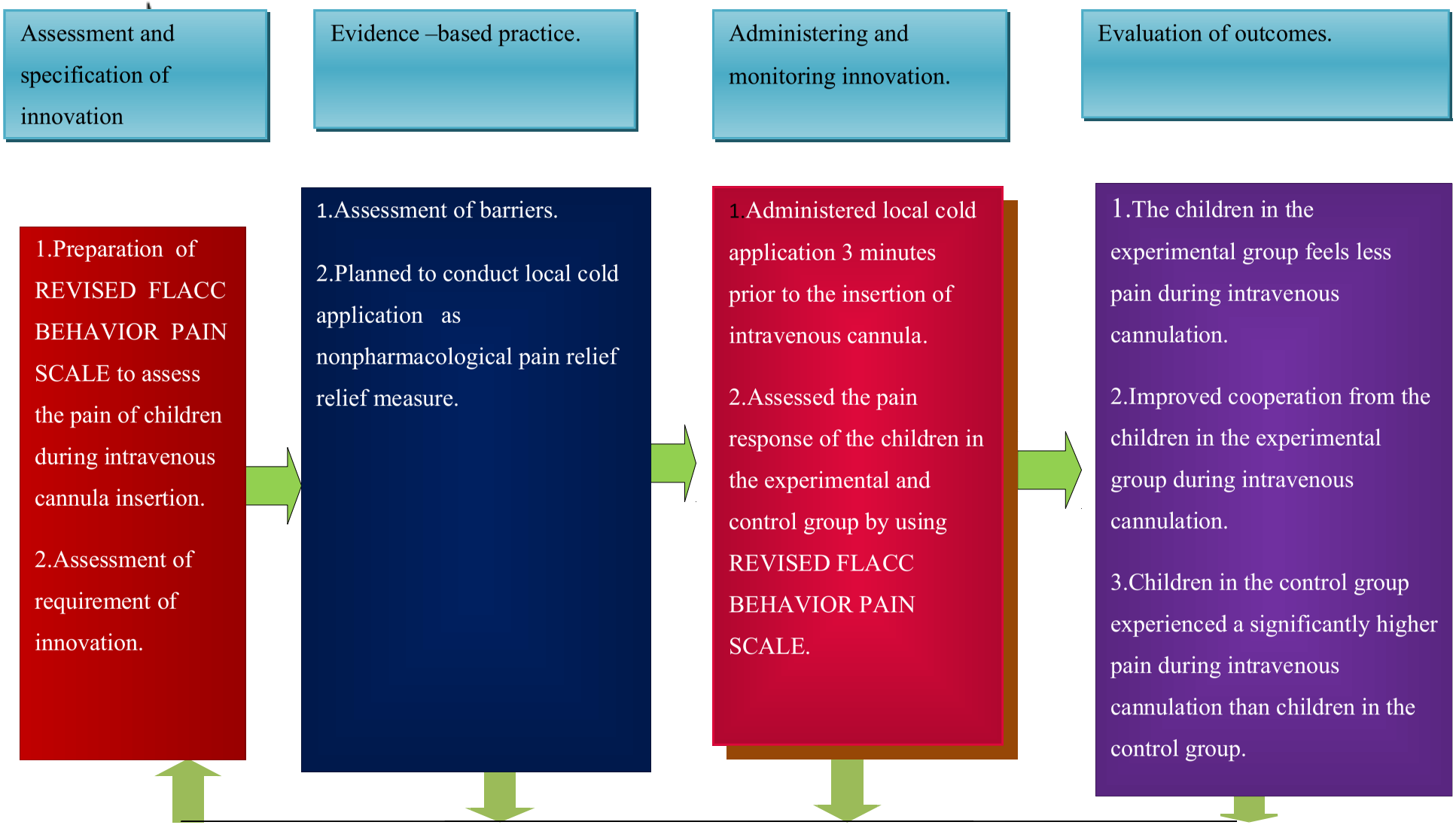


Figure 1.1.1 CONCEPTUAL FRAME WORK BASED ON OTTAWA MODEL OF RESEARCH USE(1998)

The investigator found that this conceptual frame work to be very useful to evaluate the reduction in pain response during intra venous cannula insertion after administration of local cold application among the children belongs to experimental group than the control group.

SUMMARY

This chapter deals with introduction, need for the study, statement of the problem, objectives, operational definitions, assumptions, delimitations and conceptual frame work of the study.

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

Literature review is the process of reading, analyzing, evaluating, and summarizing scholarly materials about a specific topic.**(Richard Nordquist, 2014).**

A Literature Review is "a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners. **(Arlene Fink, 2010)**

A literature review is an evaluative report of information found in the literature related to your selected area of study. The review should describe, summarize, evaluate and clarify this literature. It should give a theoretical base for the research and help the author to determine the nature of your research.**(C.Q University Library, 2014)**

Review of literature provides with a current theoretical and scientific knowledge about a particular problem, and resulting in a synthesis of what is known and not known. **(Nancy Burns et al., 2010, p.135)**

In addition to empirical reference a literature search may yield various non research references, including opinion articles, case reports, and clinical anecdotes. Such materials may serve to broaden understanding of research problem, illustrate a point, demonstrate a need for research or describe aspects of clinical practice. A written research review should provide readers with an objective, well organized synthesis of current state of evidence on a topic. The central tasks are to summarize and critically evaluate the overall evidence so as to reveal the currentstate of knowledge on a topic with regard to themes seemed to be important. **(Denise. F. Polit et al., 2009, p.171)**

- Contraindications.
- Procedure of intravenous cannula insertion in children.
- Complications.

♠ **Pain.**
- Definition.
- Pain during hospitalization in children.
- Long term effects of pain in children.

♠ **Nonpharmacological pain relief measures for hospitalized children.**

♠ **Local cold application.**
- Definition.
- Indications.
- Contraindications.
- Physiological and therapeutic effects of local cold application.
- Methods of local cold application.

♠ **Nurses responsibilities in pain reduction before intravenous cannula insertion.**

♠ **Effectiveness of local cold application on pain response during intravenous cannula insertion.**

CHILDREN (6-12 YEARS)

Children of today are the citizens of tomorrow. So they are our most valuable resource. According to the world population statistics, over 40% of the population is constituted of the children population. **(Hatfield N. B, 2008)**.

Worldwide, children represent a higher proportion of the population, in which the children younger than 15years accounting for 1.8billion (28%) of the world's 6.4 billion persons. **(Kliegman et al., 2007)**

The children in India continues to be the most vulnerable section of the society and their growth and development remains a major concern. In India the population of children below 18 is high as 41%. A large population of these children languish in the quagmire of apathy and alienation, suffering the worst forms of deprivation and are the victims of various forms of exploitation and abuse. According to the 2001 census, India is estimated to have more than 400

adolescents, is severely depressed. Provision of warm responsive support and redirection of energies into enjoyable activities can help to dissipate the negative energies of the moment. Children with extended and frequent hospitalizations may be at risk in the areas of identity development, attachment, and maturity. Threats to identify development may be minimized by providing children as much as stability, and continuity as possible, inside and out of the hospital. **(Clara Shew et al., 2010, pp.273-275)**

Children often experience severe procedure related pain in hospitals. Maximum procedures that are performed to cure illness among children are traumatic, painful, upsetting and frightening to the children. Unfortunately attempts to minimize pain because of medical intervention have not kept in pace with technological advances in pediatric care. In hospital children undergo multiple painful procedures; Venipuncture, intravenous cannulation, capillary stick, and injections are most commonly performed. Venipuncture is one of the most commonly experienced procedure by hospitalized children.**(Navjot Kiran et al., 2013, pp. 61-63)**

INTRAVENOUS CANNULA INSERTION.

a. Definition.

Intravenous cannulation is defined as the placement of a device within a vein to allow access to the venous system. These devices can then be used to deliver drugs and fluid to the patient. **(Meredith Leonard., 2010 p. 77)**

Insertion of an IV cannula involves putting a “tube” into a patient’s vein so that infusions can be inserted directly into the patient’s bloodstream. **(Jepsonrae, 2015)**

b. Indications of intravenous cannula insertion.

The main indications for intravenous cannula insertion in children are repeated blood sampling, intravenous fluid administration, intravenous medication administration, intravenous chemotherapy administration, intravenous nutritional support, intravenous blood or blood products administration, intravenous administration of radiologic contrast agents (eg, for

Main contraindications for intravenous cannula insertion are inflammation or infection of the insertion site, forearm veins in patients with renal failure (may be needed for arteriovenous fistulae), irritant drugs into small veins with low flow rates.**(C. Waitt, 2009, p.71)**

d. Complications .

Local complications like infiltration, phlebitis, thrombophlebitis are frequently occurs than systemic complications. Lifethreatening systemic complications like fluid overload, embolus, allergic reaction, sepsis also will occur. **(Campbell, 2015 p. 69, Canterbury, 2012 pp 1-8)**

The insertion of a cannula is a routine event for health care professionals. Many children and families associate it with dramatic events and serious illness. Cannulation can be both traumatic and painful for the child and stressful for the family. They will require support and encouragement to deal with the procedure. **(Eland, 2010)**

e. Procedure of intravenous cannula insertion.

Intravenous therapy is widely used for children. Venipuncture in children is often performed with a butterfly catheter. Vein size and kind of fluid to be infused guide the choice of the catheter. Generally the smallest catheter throughout which the fluids and medications can be safely infused should used. Most of the children 20-24 gauze catheter provide adequate access. The most commonly used sites are the veins of the hand and antecubital area. The rate and type of fluid infused, length of time the intravenous line is needed, and the availability of veins often determines the site selection in children.**(Susan Rowen James, 2011, pp no. 351-388)**.

A convenient position is to place the child in the parent's lap with the child facing the parent. Next place the child's arm for venipuncture on a firm surface such as treatment table. The child's overstretched arm is partially stabilized by the technician drawing the blood. The have the parent hug the child's upper body, perceiving movement, and use of arm to immobilize the venipuncture site. **(Marilyn. J. Hockenberry, 2010)**

Assess the child's ability to hold the affected extremity still during the procedure. Give the child suggestions for coping with the discomfort lead have the practice coping techniques in

'pinch,' it might be helpful to advise the child to take a deep breath and blow out the pain. Catheter placement is confirmed by blood return. After the catheter is placed secure it in place with tape and a sterile, clear, occlusive dressing or a tape. At last secure the extremity with a well-padded arm board if necessary.**(Migdal et al., 2008)**

In hospital practice intravascular lines are used for various purposes like recording pressure and to administer drugs, fluids and to draw out blood. Pain inflicted by the insertion of cannula into the skin is a significant concern. Effort should be made to assess and manage acute pain. As, by doing so, nurses can reduce pain, increase patient comfort, satisfaction and improve patient outcomes.**(Jacobson, 2009)**

Intravenous catheter insertion is traumatic experience for children and parents. It is significant source of pediatric pain that can have long lasting effects. **(Kennedy et al., 2010)**

PAIN

The word pain is derived from the Greek word 'poine', which means penalty or punishment. Pain is a sensory experience associated with actual or potential damage of tissue, with physiological and psychological responses. Pain is a personal experience and varies from person to person. It is manifested in verbal and nonverbal behaviors, physiological responses like pulse rate, respiratory rate, blood pressure, emotional and spiritual reactions. **(Nursing clinics of America, 2010)**

Pain is the most common adverse stimuli experienced by the children. According to the international association of study of pain, "pain is an unpleasant, sensory and emotional experience associated with actual or potential tissue damage. The pain is a source of anxiety and distress for children, parents and care givers. **(Shona Joseph, 2013)**

There is growing recognition in pediatric emergency care that children experience avoidable pain and distress during invasive procedures, and that this pain likely plays a role in shaping the

Pain is a subjective and uniquely lived experience, is an integrating phenomenon. Many factors have been identified as influencing pain perception and response, such as gender, age, past experience, anxiety, culture, ethnicity, character personality dimensions and temperament. **(Manon Ranger et al., 2008)**

Perception of pain in pediatrics is complex and entails physiological, psychological, behavioral and developmental factors. The common pain measures used for the children are behavioral. These measures include crying, facial expressions, body posture and movements. **(Shona Joseph, 2013, p.57)**

a. Definition.

Pain is highly unpleasant and very personal sensation that cannot be shared with others. "It can be defined as an unpleasant sensory and emotional experience associated with actual or potential damage or described in terms of such damage". **(International Association for the study of pain, 1994)**

Pain is basically sensation referred to the body which an unpleasant represents the suffering induced by the psychic perception of the real, threatened or phantized injury.**(Engel., 1970)**

Pain is 'whatever the experiencing person says it is ,existing whenever he says it does'. **(Mac Caffery and Pasero, 2003, p.212)**

Pain is often occurs with in a situation that is threatening, such as during physical trauma or disease. Part of the affective dimension of pain is the moment by moment unpleasantness, which consist of emotional feelings that pertain to the present or short term future as annoyance, fear, or distress. **(Stephen Nillson, 2010 , p.12)**

Pain is ineffable and elusive. It confounds the grasp of language.**(Whelan, 2003, p. no 18)**

b. Pain during hospitalization in children.

Although pain is a common experience, it is a complex one, unique for each individual every

that pain was infrequently assessed, yet occurred commonly across all age groups and services and was often moderate or severe.**(Taylor EM et al., 2009)**

Bonnie J. Stevens et al., (2012) conducted a study to assess the pain assessment and intensity in hospitalized children in Canada. The objective of this study was to determine the nature and frequency of acute pain assessment in Canadian pediatric hospitals and factors influencing it. Pain assessment practices and pain intensity scores documented during a 24-hour period were collected from 3,822 children aged 0 to 18 years hospitalized on 32 inpatient units in 8 Canadian pediatric hospitals. The results of the study shows that numerous acute pediatric pain assessment measures exist; however, pain assessment is not consistently performed in hospitalized children. **(Bonnie. J. Stevens et al., pp 857-865)**

Taylor EM, (2009) conducted a prospective cross-sectional survey of pain prevalence, intensity, assessment and management in a Canadian pediatric teaching hospital.The main objectives of the study was to benchmark pain prevalence, pain intensity, pain assessment documentation and pharmacological treatment of pain. The present prospective cross-sectional survey took place in Hospital for Sick Children, a Canadian tertiary and quaternary pediatric hospital. A structured, verbally administered questionnaire was used to obtain information on patient demographics, pain before admission, pain intensity during admission and pain treatment. The results of the study shows that pain was infrequently assessed, yet occurred commonly across all age groups and services and was often moderate or severe.

Cummings EA et al., (2009) conducted a study on prevalence and source of pain in pediatric inpatients. The present study is an epidemiological investigation of pain in a pediatric hospital. Among 100 children were interviewed, forty-nine percent of subjects reported clinically significant levels of worst pain. Twenty-one percent of subjects had clinically significant levels of usual pain. Causes of pain were variable and included disease, surgery, and intravenous lines. Children were given significantly less medication than was prescribed, regardless of their reported pain level. Many children endure unacceptable levels of pain during hospitalization.

belongs to different age groups. Level of stress were rated using scale of 1-5. The results of the study shows that 83% of the toddlers, 51% of the pre- adolescents and 28% of adolescents experienced high stress levels during venipuncture. The results of the study shows that age correlates with pain and distress. Interventions to relieve distress should be provided especially for toddler and pre-adolescent group.

Kolk et al (2005) conducted a clinical trial on 31 children. Subjects were randomized into two groups, no preparation and preparation that included local anesthesia of the skin, procedural information and parental involvement. Raters who were blinded to the randomization viewed the video tapes of the children and rated distress levels. The authors concluded that children with preparations exhibited less levels of distress.

C. Long term effects of pain in children.

Painful procedures are a component of routine and specialized health care in children, and cannot be avoided. Recent evidence of the potential and detrimental short term and long term effects of untreated procedural pain has led to a surge in research developing and evaluating interventions. **(Jill E MacLaren, 2007, pp no. 111-116).**

The behavior of children during invasive procedures is widely individual and depend on degree of perceived pain. Perception of pain is affected by emotional and situational factors. It also varies according to age, sex, cognitive level, temperament, culture, parental support and other institutional factors such as previous experience with painful exercise, suppression/alleviation of pain using pharmacological and nonpharmacological means. **(Lucie Sikorova, 2011, Shona Joseph, 2013, 57)**

Needle phobia is a term used to describe an anticipatory fear of need insertion. If pain and anxiety are poorly managed, there can be significant negative consequences. The memory of traumatic venipuncture experiences can lead to extreme anxiety and physiological responses such as venous constriction. Some children and young people may have been conditioned by the fears of relatives or friends concerning needle procedures. **(Thurgate C. Heppell, 2011).**

the child's age, cognitive level, type of pain, and situation. No single scale is useful for all children with all types of pain.**(Melanie A. Crowley et al., 2010)**

NONPHARMACOLOGICAL PAIN RELIEF MEASURES.

The non pharmacologic approach is an essential component of pain relief. Non pharmacological measures was chosen as the primary intervention because it provides a simple approach in reducing pain that has been shown to be effective in a number of settings, it requires little training, and has a number of theoretical sound reasons for why it should work. **(Jisy Jose et al., 2013)**

The pain related to minor invasive nursing procedures can be dealt with non-pharmacological measures than pharmacological measure. The pharmacologic measures like local anesthetic spray, eutectic mixture of local anesthetic (EMLA) have long term effects, which is undesirable. Also its cost effect should be kept in mind, as these simple but essential procedures are repeated for the same person for many times. Hence non-pharmacological measures can be the choice for relieving or preventing such minor invasive pain, like venipuncture pain. **(Saju T.P, 2010)**

Cutaneous stimulation can be clubbed with acupressure to increase its effectiveness in pain management.**(Margaret .F. Alexander et al., 2010, p. 755; M.R. D'souza, 2010).**

The analgesic effects of cutaneous stimulation (pressure, massage, vibration, heat, cold) are thought to be caused by activation of large A-beta fibers and inhibition of smaller A-delta and C fibers, thus closing the gate to pain impulses. The exact mechanism by which this gating occurs has not been established, but it may be through endorphin release. **(Ruth,2009)**

Exposure to the heat or cold causes both systemic and local responses. In cryotherapy when the skin is exposed to cold temperature, the systemic response includes vasoconstriction and pilo erection to conserve heat.**(Anne Griffin Perry et al., 2010)**

Local cold application is a therapy applied to the body part for local or systemic effect. **(Pameela. J. Carter, 2008, pp no. 537-540)**

Cold therapy or cryotherapy is applying ice or cold for inducing a therapeutic effect. **(Trendrikus. G. Oosterveld et al., 2009)**

B. Indications.

Cold therapy can be used to control pain and edema. Local cold applications are mainly used for treating burns, to inhibit spasticity, to reduce muscle spasm, to reduce acute inflammatory reaction, to reduce pain, to reduce limb metabolism, to produce reactive hyperemia, to facilitate muscular contraction for various forms of neurogenic weakness, and to treat restricted knee flexion due to traumatic lower extremity fractures.**(Lois White et al., 2009, pp no. 567-569; Milton J Klein et al., 2013; Carol R. Taylor et al., 2011, pp no, 1450-1451).**

C. Contraindications.

Main contraindications of local cold applications are the first 24 hour after traumatic brain injury, active hemorrhage, non-inflammatory edema, localized malignant tumor, skin disorder, open wound, allergy or hypertensive to cold, neurosensory impairment, open wound, impaired circulation, and impaired mental status etc.**(Christensen et al., 2003, pp no.443-448; Carol R. Taylor et al., 2011, pp no.1450-1451).**

D. Physiological and therapeutic effects of local cold application.

Cryotherapy has the primary effect of cooling tissue. Depending upon the method of application and duration of therapy, physiological effects varies.**(Milton .J. Klein et al., 2013)**

With cold application, maximum vasoconstriction occurs when the involved skin reaches a temperature of 15^0C (60^0F). Below 15^0C, vasodilation begins. This mechanism is protective. It helps to prevent freezing of body tissues normally exposed to cold.**(Carol. R. Taylor et al.,**

time as part of rehabilitation programme for the treatment of both acute and chronic injuries. The reduction of temperature creates positive physiological and biological effects, such as pain relief, reduction of muscle spasm, decrease of nerve conduction velocity, and decrease in inflammation edema by constriction of blood vessels. Simultaneous application of cold and compression is better treatment. Compress acts with cold to reduce the blood flow and edema formation, while compression provides support to the soft tissues.**(Kullenberg et al., 2009)**

The local cold application can cause systemic, local, therapeutic effects. The main systemic effects includes vasoconstriction, shivering. Local effects includes vasoconstriction, decreased capillary refill, decreased cellular metabolism. The main therapeutic effects includes it relaxes muscles, slows down bacterial growth, decreases inflammation, decreases pain, decreases bleeding and induces local anesthetic effect.**(Thorenzoel et al., 2013)**

The local application of cold suppresses the metabolic rate of the immediately surrounding soft tissue. This decrease in tissue metabolism is associated with a reduction in enzymatic activity, and preventing tissue damage caused by hypoxia. Local hypothermia induces vasoconstriction and lowers microcirculation by more than 60%, an effect that can persist for up to 30 minutes after cessation of cooling. Cold induced vasoconstriction reduces extravasation of blood into surroundings tissues, local inflammation and edema production. The amelioration of pain associated with the direct application of cold to injured tissue is related to the reduction in edema formation as well as to decreases in motor and sensory nerve conduction.**(Jon E Block et al., 2010)**

Seeking improvements related to pediatric intravenous practices presents an opportunity to improve care for children in diverse health care setting and assure that standards for reducing pain from preventable procedures are met.**(RobinHetzler et al., 2011)**

E. Methods of local cold application.

Cold is applied by both dry and moist methods.Dry cold is provided with ice bags, cold packs or hypothermia blanket. Cold compress is the method of applying

Crushed, shaved or chipped ice usually in a plastic bag applied directly to the injured area. Some form of protection should be used to prevent frostbite. Knight suggests that, since ice pack temperature is 0^0 C and frostbite risk is at -25^0 C, that ice packs can be directly applied to the skin to maximize the effectiveness of cold application. Ice packs are the most efficient form of ice therapy.

b. Cold gel packs.

A gelatinous substance enclosed in a vinyl cover containing water, and antifreeze (such as salt). Since gel packs are chilled to far below 0^0C, they may cause frostbite.

c. Chemical cold packs.

They consist of two chemical substance, one in small vinyl bag with in a larger bag, squeezing the small bag until it ruptures and spills its contents into the larger cause a chemical reaction producing cold. They are ideally used for emergency use, however they do not adequately lower the body temperature to therapeutic levels.

d. Ice immersion.

A container filled with ice and water, and the body part is immersed in it. Immersion is recommended for extremities.

e. Ice massage.

A cube of ice is rubbed over and around the underlying muscle fiber until it numbs. The cube is prepared in 8-10 ounce paper cup and applied with constant circular motion around the site to prevent the frostbite.

(Ramont et al., 2009, p. 555; Daniel A. Martinez, 2008; Carol R. Taylor et al., 2009, pp no. 958-961; Milton J. Klein et al., 2013, Thorenzoet et al., 2013; Pameela G Carter, 2008, pp no. 537-540)

about hospitalization. Painful situations related to intravenous cannula insertion in hospitalized children cause the same amount of anxiety and stress to their parents, who watch the entire process. Effective pain management reduces emotional disturbances caused by hospitalization among children and their parents. As a guardian of ill children, nurses in pediatric unit must provide proper pain management during hospitalization; such management only initiated after accurately assessing the degree of pain during invasive procedures.**(Caws L, 2013, pp. 6-11)**

Research Studies reveals that, among nursing diagnosis pain constantly ranks the highest position. Nurses often have the closest contact with patients on a daily basis. They are the health care providers most directly responsible for the overall management of pain. Nurses play a pivotal role in pain assessment, pain intervention, monitoring the effects of treatment and communication of information about pain management.**(Keela A. Herr et al., 2012)**

Nurses work with in almost all settings and are often associated with peoplewho suffer from pain. For a pediatric nurse, assessing and managing a child with pain is a daily problem. Nurses are not only the agents to carry out the doctor's order, but they are the ones to implement the care, and one who works closely withpatient. So the nurses, has to use some interventions to relieve pain and promote comfort in patient .**(Jisy Jose et al., 2013)**.

Sofia Bisogni et al., (2014)conducted a study to assess the perception of venepuncture pain in children suffering from chronic diseases. Some healthcare professionals still believe that children who are repeatedly exposed to painful procedures, such as children with chronic diseases, gradually increase their pain tolerance. The purpose of this study was to assess whether a difference exists in the perception of pain between children with chronic diseases and children with no previous health problems nor experience of venipuncture. The results of the study shows that children with chronic diseases have a lower pain threshold than children of the same sex and age who experience venipuncture for the first time.**(Sofia Bisogni et al., 2014)**

In caring children, nurses must have an appreciation of child's concerns about bodily harm and reactions to pain at different developmental periods. **(Donna L. Wong et al., 2010)**

experiences on pain, patients age, gender and culture. Other potential barriers to inadequate pain management includes the lack of standardized pain assessment and documentation tools. **(Jennifer Richards et al., 2007, pp no. 17-24)**

Inadequate or improper application of available information and therapies is certainly the most important reason for inadequate procedural pain relief.**(S. Nilson et al., 2009)**

EFFECT OF LOCAL COLD APPLICATION ON PAIN RELIEF DURING INTRAVENOUS CANNULATION

Neil A Canbulat et al., (2014) conducted a quasi-experimental study to assess the effectiveness of external cold and vibration for procedural pain relief during peripheral intravenous cannulation in pediatric patients. This study was a prospective randomized controlled trial. The sample consisted of 176 children ages 7-12years who were randomly assigned in two groups; control group received no peripheral intravenous cannulation intervention and experimental group received external cold and vibration via Buzzy. Procedural pain was assessed using Wong Baker Faces Scale and visual analogue scale. Comparison of two groups showed significantly lower pain and anxiety levels in the experimental group than in the control group. Buzzy can be considered to provide an effective an effective combination of coldness and vibration. This method can be used during pediatric peripheral intravenous cannulation by pediatric nurses.

Whelan HM et al., (2014) conducted an experimental study to assess the impact of a locally applied cold vibrating device on outpatient venipuncture in children. As part of a quality improvement project, patients and phlebotomists were surveyed prior to initiation of implementation of the cold vibrating device Buzzy. Prior to the device, 17 of 29 children indicated they wished something had been used to decrease venipuncture pain. 80% of those using the vibrating device indicated that they would like it used for future procedures. The study

this study was to investigate the effectiveness of local cold application for reducing children's pain and distress before, during, and after standard blood collection procedure. Distress was measured with the Amended Observation Scale of Behavioral Distress, while pain was measured with a visual analog scale. Parental anxiety during the procedure was measured with State Trait Anxiety Inventory. Children assigned to the experimental group reacted with less distress than in the control group.There were significant differences in pain ratings and in the level of parental anxiety. The study concludes that the cold application during blood draw procedures reduces distress in childre

Navjotkiran et al., (2013) conducted a quasi experimental study to assess the effectiveness of ice pack application at the site prior to venipuncture on intensity of pain among children of 3-7 years. Total 100 subjects were selected by purposive sampling. One sister grade II was to do the venipuncture in both the groups. Ice pack was applied at the site prior to venipuncture for three minutes. Pain was assessed by FLACC behavior pain assessment scale. In the experimental groups 76% experienced mild discomfort , 16% experienced moderate discomfort and only 8% experienced severe discomfort but it was 30% ,44% and 26% respectively in control group. Findings of the study clearly indicate that intensity of pain is significantly lesser in experimental group than control group. This study recommends that ice pack should be incorporated as one of the pain management modality in daily practice.

Se Na Ahn et al., (2013) conducted an experimental study to assess the effects of local cold application on pain responses of preschoolers during venipuncture**.** The aim of present study was to assess the effects of local cold application on pain responses of preschoolers during venipuncture. Pain responses during venipuncture were measured by the Face Pain Rating Scale, the Procedure Behavior Checklist by nurses, the Visual Analog Scale by mothers, in addition to measurements of the children’s pulse rate and level of oxygen saturation. Local cold application was effective in decreasing the pain responses of the children as assessed by face pain rating

Sadeghi T et al., (2013)conducted a study to assess the Effectiveness of local cold application on children's pain during intravenous catheter insertion. The purpose of the study is to examine the effectiveness of local cold application during intravenous catheter insertion on the intensity of pain in children ages 4-6 years. In this quasi-experimental study, ice pack were applied to the children in the intervention group three minutes before at the site of intravenous catheter insertion and to immediately mark the Wong-Baker Faces Pain Rating Scale. There was a significant difference in the intensity of pain between the control group and the intervention group. The study concludes that Local cold application may be an easily accessed, inexpensive, and effective technique to control or reduce pain in young children.

NishaViswambaran et al., (2013) conducted a quasi experimental study to assess the "effectiveness of ice pack versus thrombophob gel for reducing intravenous infiltration in patients admitted in pediatric wards of selected hospitals, Mangalore" The objectives of the study was to assess the degree of intravenous infiltration in patients of selected hospitals; and compare the effectiveness of ice pack versus thrombophob gel in reducing intravenous infiltration. 40 children upto 10 years were selected by purposive sampling technique. The tools used to collect the data included Base line Performa; Modified Infiltration scale and an Inch Tape. The results of the study shows that both thrombophob gel and ice pack are effective in reducing intravenous infiltration. The study concluded that ice pack application can be implemented as a routine practice in the pediatric wards to reduce the intravenous infiltration which is cost effective.

Anesth et al., (2013) conducted a randomized controlled trial to Compare the use of the local cold application and EMLA cream to relieve venipuncture pain. The objective of this study was to compare the efficacy of the EMLA cream with that of the local cold application in adult patients during cannulation. One hundred ninety-five patients were randomized prospectively to three groups. The dorsum of the non-dominant hand was covered with a thick paste of 2.5 g of EMLA cream in the EMLA group and left for a minimum of 30 min before venipuncture. In the control group, the same procedure was applied except that Vaseline. The patients then scored the

study aims to assess the effectiveness of ice application on pain among toddlers intravenous cannula insertion. 60 children aged 15-18 months were selected by convenience sampling technique. Pain was assessed with FLACC Behavioral pain scale. The result of the study shows that in the experimental group, majority of samples experienced mild pain, whereas in control group, majority of the samples experienced severe pain during intravenous cannula insertion. The study revealed that the ice application was effective in minimizing the intravenous cannulation pain in toddlers.

SevilInal et al., (2012) conducted a randomized controlled trial to investigate the effect of external cold and vibration stimulation via Buzzy on pain and anxiety levels of children during blood specimen collection. 120 children were randomly assigned to control group or an experimental group. Anxiety were assessed using the children's anxiety and pain scale along with parent and observer reports. Procedural pain was assessed via the faces pain scale-revised along with self-report of children, and parents' and observer's reports. The experimental group showed significantly lower pain and anxiety levels compared to the control group. This study concludes that use of external cold and vibration via Buzzy decreased perceived pain and reduced children's anxiety during blood specimen collection.

Amy L. Baxter, (2011) done an experimental study on device combining cold and vibration to standard care for pediatric venous access pain relief. A convenience sample of 80 children 4 to 18 year old by block randomization assigned in the experimental and control group. Subjects in the experimental group received the cold vibration device placed 5 to 10 cm proximally throughout venipuncture care .Pain was measured via self and parent report using the 0 to 10 point faces pain scale revised with coded videotaped observed behaviors. The results of the study shows that median patients reported pain scores with the device were lower than with standard care. Observed distress behaviors were common with standard care than with the device. The combination of cold and vibration decreased venipuncture pain significantly more than standard care without compromising procedural success.

observed between the mean score of pain between children in the experimental and control group. In relation to the presence of parents, no significant differences were found in the mean pain scores, where as cooperation were significantly different. The study concludes that local cold application effectively improved pain management and favored children's cooperation during venipuncture.

Farion K J et al., (2010) conducted a study to assess the effect of vapocoolant spray on pain due to intravenous cannulation in children. In this double-blind randomized controlled trial, 80 children aged 6-12 years received either vapocoolant spray or placebo before cannulation. Children rated their pain using a 100-mm colour visual analogue scale. Secondary outcomes included success rate on first attempt at cannulation and pain ratings by the children's parents, nurses and child life specialists. The study found a significant reduction in pain with the use of vapocoolant spray. The study concludes that vapocoolant spray effectively reduced pain due to intravenous cannulation in children and improved the success rate of cannulation.

Agarwal A et al., (2010) conducted a study to evaluate the efficacy of the local cold application on venous cannulation pain. The study was a prospective, randomized study. The aim of the study was to evaluate the efficacy of the local cold application on pain associated with venous cannulation. Seventy-five adults, anesthesia assessment physical status I and II, either sex, undergoing elective surgery, were included in this study. Patients were randomized into 3 groups of 25 each. Group I: control, Group II : application of ice pack 5 minutes prior to cannulation ; Group III: pressed a rubber ball. A significant reduction in the incidence of pain was observed in the ice pack group. The study concludes that application of ice pack at the time of venous cannulation greatly decreases this pain.

Cohen Reis E et al., (2010)conducted a study that Vapocoolant spray is equally effective as EMLA cream in reducing venipuncture pain in school-aged children. The objective of the study to compare the efficacies of two pain management methods in reducing venipuncture pain and distress. Study design was a randomized, controlled clinical trial. 62 enrolled children were

study concludes that when combined with distraction, vapocoolant spray significantly reduces pain compared with distraction alone.

Asma et al., (2011) Cconducted a quasi experimental study to assess the impact of cryotherapy on pain intensity at puncture sites of arteriovenous fistula among children undergoing hemodialysis .The aim of the study was to investigate the impact of cryotherapy on pain intensity at puncture sites of arteriovenous fistula among children undergoing hemodialysis. A total sample of 40 children undergoing hemodialysis using arteriovenous fistula was selected during six months from two hemodialysis Units, Cairo University. The mean of Wong-Baker faces pain score during artery needle puncture reduced in the study group in the day 3 and than the control group in the day 1 and 2. The mean of Wong-Baker faces pain score during vein needle puncture reduced in the study group in the day 3 and 4 than the control group in the day 1 and 2. The study concluded that cryotherapy is effective in reducing subjective pain scores.

Basaranoglu G et al., (2009) conducted a study to assess the effectiveness of local cold application on venipuncture pain. The purpose of this study was to evaluate the effect of local cold application, on perception of pain during peripheral venous cannulation in adult patients. This was a prospective randomized clinical trial. 110 patients scheduled for elective surgery were randomly divided into two groups. Half of the patients, Group A, underwent venipuncture during application of ice pack on the proximal aspect of the arm and the other half of the patients, Group B, underwent venipuncture without any interventions. Patients made a pain assessment using a 0-10 point numerical rating scale. The results of the study suggests that there is a significant difference in the pain scores between group A and group B. On the basis of data from this study, the local cold application may be of the value before venous cannulation as a simple and practical method to reduce pain from venous cannulation.

Aminabadi NA et al., (2009) conducted a study to assess the effect of pre-cooling the injection site on pediatric pain perception during intravenous cannula insertion. The aim of the

intravenous cannula insertion significantly reduced the pain during intravenous cannula insertion in pediatric patients.

Isabelle Gaboury et al., (2008) conducted a randomized controlled trial to assess the effectiveness of vapocoolant spray on pain due to intravenous cannulation in children. In this double-blind randomized controlled trial, 80 children aged 6-12 years received either vapocoolant spray or placebo before cannulation. Children rated their pain using a 100-mm colour visual analogue scale. Secondary outcomes included success rate on first attempt at cannulation and pain ratings by the children's parents, nurses and child life specialists. The study concludes that vapocoolant spray quickly and effectively reduced pain due to intravenous cannulation in children and improved the success rate of cannulation. It is an important option to reduce childhood procedural pain in emergency situations, especially when time precludes traditional interventions.

Sabitha P. B et al., (2008) conducted a study to assess the effectiveness of cryotherapy on arteriovenous fistula puncture related pain in hemodialysis patients. 60 patients undergoing hemodialysis via an arteriovenous fistula and who were older than 16 years of age, were enrolled for this randomized control trial. The tools used for data collection were a questionnaire for collecting demographic and clinical data, an observation checklist for assessing objective pain behaviors, and a numerical rating scale for subjective pain assessment. The objective AV fistula puncture pain scores on days 1 and 2 of hemodialysis within the experimental group were found to be significantly reduced. Pain scores on days 1 and 2 of hemodialysis within the control group were found to be similar on two consecutive days of hemodialysis. The study concludes that cryotherapy is effective in reducing arteriovenous fistula puncture pain of hemodialysis patients.

SUMMARY

helped the investigator to state the problem clearly, establish the need for the study, develop a conceptual frame work, develop the tool and achieve the objectives of the study.

METHODOLOGY

CHAPTER III

METHODOLOGY

This chapter deals with methodological approach adopted for this study. The purpose of this study is to assess the effectiveness of local cold application on pain relief during intravenous cannulation.

Methodology of the present study deals with

- **Research approach.**
- **Research design.**
- **Variables under the study.**
- **Study setting.**
- **Population.**
- **Sample**
- **Sampling technique.**
- **Tool.**
- **Validity of the tool.**
- **Reliability of the tool.**
- **Preparation of the final draft.**
- **Pilot study.**
- **Data collection procedure.**
- **Plan for data analysis.**

RESEARCH APPROACH.

Research approach tells the researcher from whom the data is to be collected, how to collect and how to analyze the data. It also suggests the possible conclusion to help the researcher in answering specific research question in most accurate and efficient way possible. **(Celia K and Willis, 2008)**

Research design is the overall planning for collecting and analyzing data, including specifications for enhancing the internal and external validity of the study. **(Polit and Hungler, 2010)**

Research design is the plan, structure and strategy of investigation conceived. Research design designates the logical manner in which individuals or other units are compared and analyzed; it is the basis of making interpretations from the data.**(Mary Jo Gorney, 2006)**

The present study was intended to identify the effect of local cold application on pain response during intravenous cannula insertion in children. The research design adopted for this study is non randomized control group post test only design. Experiments are the powerful tool for testing hypothesis of cause and effect relationship between variables.

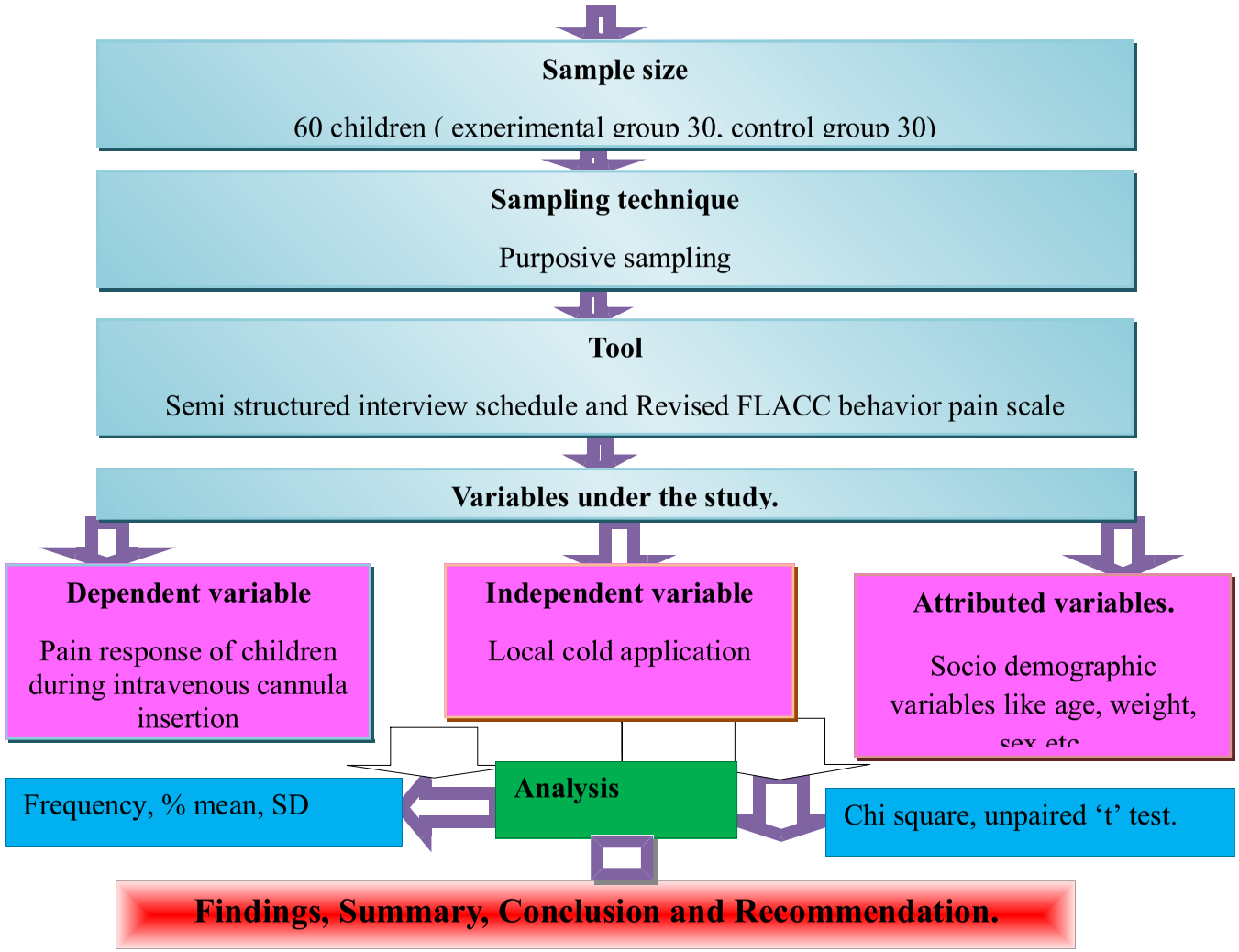
In the present study the investigator manipulates the dependent variable by administering local cold application to some subjects and withholding it from other subjects. The investigator thus consciously varies the independent variable and observes the effect on the dependent variable. Manipulation and control was used in the study. These are the characteristics of quasi experimental design. Hence quasi experimental design is used for the present study.

The design can be diagrammatically represented as

E_1	**X**	**O_1**
C_1	**-**	**O_2**

- O_1:- post test assessment of pain during intravenous cannula insertion among children in the control group without any intervention.
- O_2:- post test assessment of pain during intravenous cannula insertion after administration of local cold application among children in the experimental group.
- E :- effectiveness of local cold application on pain reduction during intravenous cannula insertion.

Figure 3.1.1. SCHEMATIC REPRESENTATION OF THE RESEARCH DESIGN



VARIABLES UNDER THE STUDY.

Independent variable.

Independent variable is a stimulus or activity that is manipulated or varied by the researcher to create an effect on dependent variable. The independent variable is also called treatment or

Attributed variables.

Attributed or demographic variables are the characteristics of the subjects that are collected to describe the samples. Age, sex, weight of the child, history of intravenous cannula insertion in previous hospitalization, history of use of any pain relief measure before intravenous cannula insertion in previous hospitalization, size of the cannula are the attributed variables.

STUDY SETTING

Setting is the physical condition and location in which data collection takes place in the study. **(Polit and Beck, 2010)**

Selection of the area for the study is one of the essential step in the research process. The selection of settings for the present study was on the basis of availability of the subjects, feasibility of conducting the study, economy of time and energy.The study was conducted in Government District Headquarters Hospital, Namakkal, Tamilnadu.

TARGET POPULATION

Target population is the aggregate of all the cases with a certain phenomenon about which the researcher would like to make generalization **(Polit and Beck, 2011).**

Target population for the present study was the children who are undergoing intravenous cannula insertion in Government Headquarters Hospital, Namakkal.

SAMPLE

Sample may be defined as representative unit of target population, which is to be worked upon by researchers during their study. **(Polit and Beck,2011)**

Sample size

Sampling techniques refers to the process of selecting a portion of population to represent the entire population.**(Polit and Beck,2011)**

Nonprobability purposive sampling technique was used for selecting the sample for the study. Children (6-12 years), who are admitted in district government headquarters hospital, Namakkal and are undergoing intravenous cannula insertion first time after the admission were selected for the study.

SAMPLE SELECTION CRITERIA.

Inclusion criteria

- Mother who are giving consent to participate in this study.
- Children who are undergoing intra venous cannula insertion for the first time during the period of their admission.
- Children who need a single attempt for a successful cannulation.
- Children who are at the age group of 6 -12years.

Exclusion criteria

- Children who are receiving IM injections.
- Children who are critically ill.
- Children who are mentally handicapped.
- Children who are admitted with surgical conditions.

TOOL.

The instrument selected for the research study should be a vehicle that would obtain best data for drawing conclusion pertinent for the study.**(Treece and Treece, 2009)**

Semi structured interview schedule and revised FLACC behavior pain scale was used to

The following steps were carried out in preparing the tool.

- Literature review.

❖ Literature from the books, journals, periodicals, published and unpublished studies were reviewed and used to develop the tool.

- Expert opinion.

❖ The content was given to the experts in various fields like pediatrician, pediatric nursing and statistics. There opinion and suggestions were taken to modify the content. The research consultant and guide were consulted when finalizing the tool.

Description of the tool.

Semi structured interview schedule and revised FLACC behavior pain scale was prepared to assess the pain of children during intravenous cannula insertion.

Section –A

Section A consist of 6 items. The items were age, sex, weight, history of intravenous cannula insertion in previous hospitalization, history of use of any pain relief measure before intravenous cannula insertion, and size of the cannula.

Section-B

Section B consist of **REVISED FLACC BEHAVIOR PAIN SCALE**. This is an observational pain scale consist of five criterias includes face, legs, activity, cry and consolability with a total score of 10. Score 0 indicates no pain, score 1-3 indicates mild pain, score 4-6 indicates moderate pain, score 7-10 indicates severe pain.

Scoring procedure

There were 5 criterias in revised FLACC behavior pain scale. Each criteria has three scores 0,1 and 2. The maximum score in each criteria is 2 and the minimum score is 0.

No pain	0	0
Mild pain	10-30	1-3
Moderate pain.	40-60	4-6
Severe pain.	70-100	7-10

VALIDITY OF THE TOOL.

Validity refers to the degree to which an instrument measures what it suppose to measure. (Polit and Beck, 2011)

The content validity of the instrument was assessed by obtaining opinion from 4 experts in the field of nursing, one pediatrician, and statistician. The experts were suggested some changes in the socio- demographic variables, reduction of certain items and organization of certain items. Appropriate modifications were done accordingly and the tool was finally modified.

RELIABILITY OF THE TOOL.

Reliability of the research instrument is defined as the extent, to which the instrument yields the same results on repeated measure.**(Polit and Beck, 2011)**

The reliability of the revised FLACC behavior pain scale was tested by administering the revised FLACC behavior pain scale for a child during intravenous cannula insertion in government hospital, Tiruchengode and rated by two different raters. Interrater reliability where Kaul Pearson's correlation formula was used to find out the reliability of the revised FLACC behavior pain scale (r= 0.92).

PREPARATION OF THE FINAL DRAFT.

The final draft of the revised FLACC behavior pain scale was prepared after testing the

Pilot study is a small scale version or trial run designed to test the methods to be used in a larger, more rigorous study.**(Polit and Beck, 2011)**

After obtaining permission from the concerned authority the pilot study was conducted in the month of May 2015 at Government Hospital, Tiruchengode.

The purpose of the pilot study was to evaluate the effectiveness of local cold application on pain response during intravenous cannula insertion among the children, to find out the feasibility of conducting the final study and to determine the method of statistical analysis. 6 school aged children were selected by purposive sampling. 3 were in experimental group and 3 were in control group. Local cold application was administrated to the children in the experimental group and withhold from the control group before intravenous cannula insertion and pain response was assessed with revised FLACC behavior pain scale in both the groups. The mean pain score in the control group were higher than the mean pain scores in the experimental group. The results of the data revealed that the tool was feasible to conduct the study.

DATA COLLECTION PROCEDURE

1. Ethical consideration.

Prior to the collection of the data written permission were obtained from the joint director of district government headquarters hospital, Namakkal. The patients were assigned that anonymity of each individual would be maintained and informed consent was obtained from the parents and the children.

2. Period of data collection.

The data was collected from 60 children (6-12 years), admitted in district government headquarters hospital ,Namakkal from 01.06.2015 to 30.06.2015.

4. Administration of local cold application to the children in the experimental group.

An ice cube of 5*5 centimeters, with in a plastic cover, covered with a gauze and applied on the site of intravenous cannula insertion for a period of 3 minutes prior to intravenous cannula insertion were applied to 30 children in the experimental group.

5. Evaluation of effectiveness of local cold application.

Effectiveness of local cold application was evaluated by assessing the pain score of children in the experimental group during intravenous cannula insertion with revised FLACC behavior pain scale.

PLAN FOR DATA ANALSIS

The obtained data were analyzed on the basis of the objectives of the study by using descriptive and inferential statistics. The plan for data analysis as follows.

- Data were organized in master sheet.
- The frequencies and percentage of the analysis of socio demographic variables like age, weight, sex, history of intravenous cannula insertion in previous hospitalization, history of use of any pain relief measure before intravenous cannula insertion in previous hospitalization, and size of the cannula were presented in table and graph.
- Maximum score, range score, mean score, mean score percentage and standard deviation of experimental and control group were analyzed and presented in table and graph.
- Unpaired ‘ t’ test is used to compare the level of pain during intravenous cannula insertion between experimental and control group and presented in table.
- Inferential statistics especially chi-square test is used to find out the association between posttest level of pain response in the experimental group and selected socio demographic variables and findings were showed in tables and graphs.

development and description of the tool, content validity, reliability of the instrument, pilot study, data collection procedure and plan for data analysis.

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

CHAPTER IV

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

Analysis is the process of organizing and synthesizing the data so as to answer research questions and test hypothesis. Interpretation is the process of making the sense of results of a study and examining their implications.**(Denise F Polit, 2010)**

The data which are necessary to provide the adequacy of the study were collected through semi structured interview schedule and analyzed using relevant descriptive and inferential statistics. The substantive summary of the findings were arranged in line with objectives of this study.

STATEMENT OF THE PROBLEM

"A study to assess the effectiveness of local cold application on pain response during intravenous cannula insertion among children (6-12years) admitted in Government District Headquarters Hospital, Namakkal , Tamilnadu."

OBJECTIVES OF THE STUDY

5. To assess the level of pain during intra venous cannula insertion among children in control group.
6. To evaluate the effectiveness of local cold application on pain response during intra venous cannula insertion among the children in the experimental group.
7. To compare the level of pain scores between experimental and control group.
8. To find out the association between pain level and selected demographic variables like age, sex, weight etc in the experimental group.

PRESENTATION OF THE DATA

- **Section I:-**

Distribution of socio demographic variables of the samples in the experimental group and control group.

- **Section II:-**

Assessment of post test level of pain in the control group.

- **Section III:-**

SECTION I

DISTRIBUTION OF SOCIO DEMOGRAPHIC VARIABLES OF THE SAMPLE.

Table 4.1.1 Distribution of children according to their age.

N = 60

	Group		Total	

6-8 years	16	53.33	15	50	31	51.67
9-10 years	7	23.33	8	26.67	15	25
11-12 years	7	23.34	7	23.33	14	23.33
Total	30	100	30	100	60	100

The table 4.1.1 and figure 4.1.1 shows that majority of children in the experimental group 16 (53.33%) and in the control group 15(50%) belongs to the age group of 6-8 years, 7(23.33%) were in experimental group and 8 (26.67%) were in control group belongs to the age group of 9-10 years and 7(23.33%) in experimental group and 7(23.33%) in control group belongs to the age group of 11-12 years.

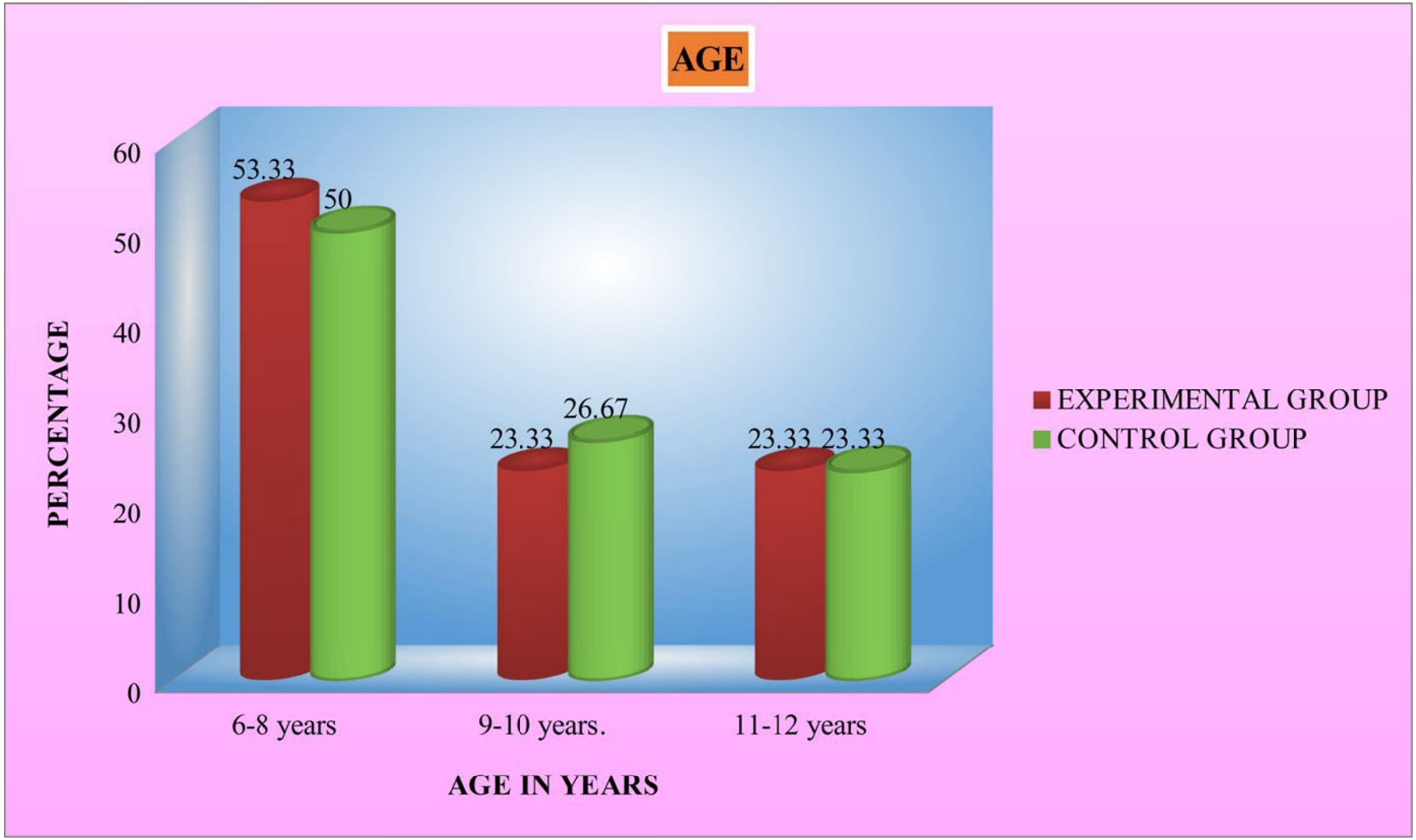


Figure 4.1.1 Distribution of children according to their age

Table 4.1.2 Distribution according to weight of the child.

N = 60

Weight in kilograms	Group				Total	
	Experimental		Control		Number	Percentage
	Number	percentage	Number	Percentage		
Upto 20 kg	15	50	12	40	27	45
21-40 kg	11	36.67	15	50	26	43.33
>40 kg	4	13.33	3	10	7	11.67
Total	30	100	30	100	60	100

Table 4.1.2 and figure 4.1.2 shows that 15 (50%) children in the experimental and 12(40%) children in the control group weighs upto 20 kg. About 11(36.67%) children in the experimental and 15(50%) in the control group belongs to 21-40 kg, only 4(13.33%) children in the experimental and 3(10) in the control group belongs to >40kg.

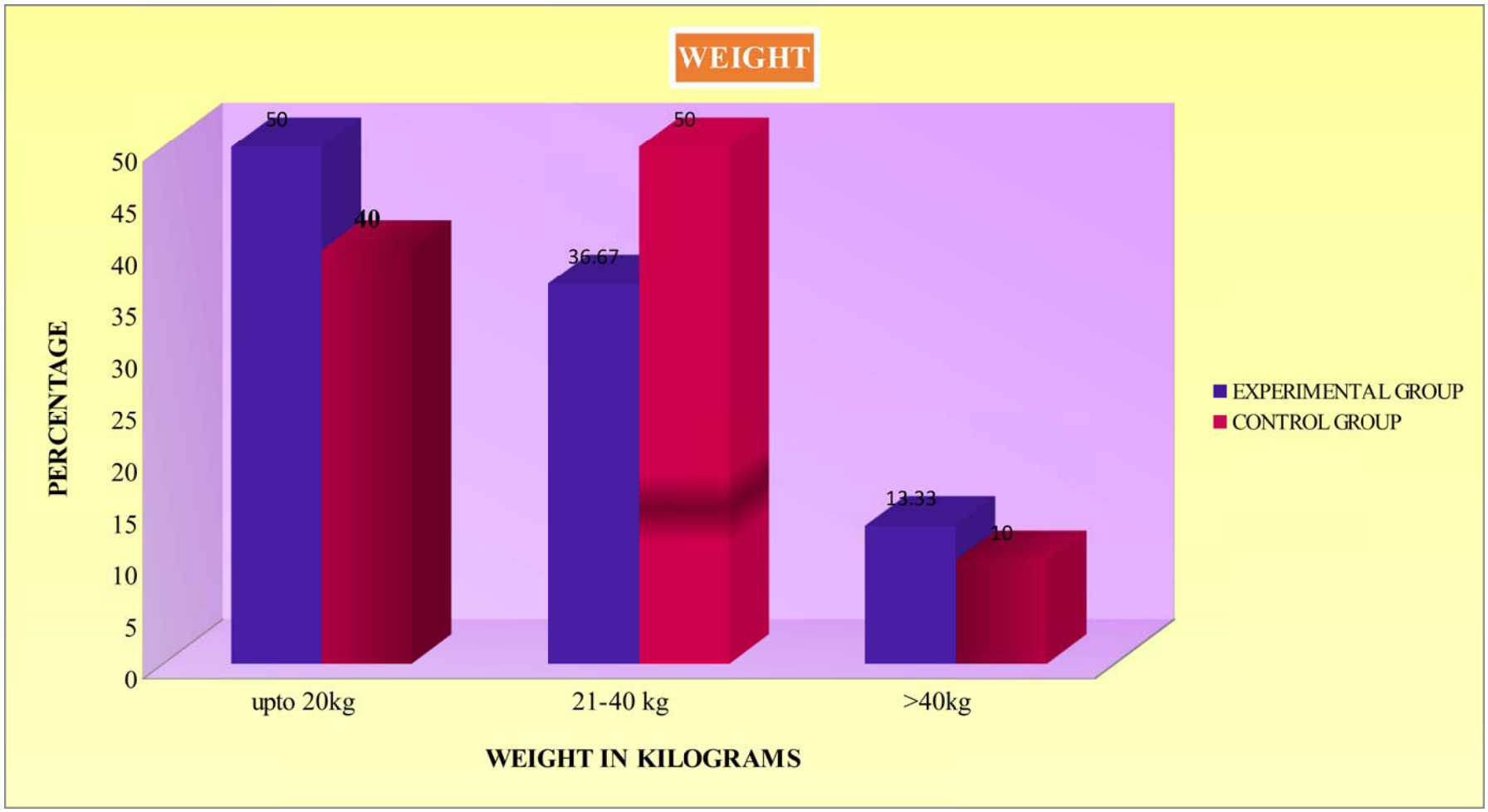


Figure 4.1.2. Distribution of children according to their weight.

Table 4.1.3 Distribution of children according to sex.

N = 60

Sex	**Group**				**Total**	
	Experimental		**Control**		**Number**	**Percentage**
	Number	**Percentage**	**Number**	**Percentage**		
Male Female	13 17	43.33 56.67	13 17	43.33 56.67	26 34	43.33 56.67
Total	30	100	30	100	60	100

Table 4.1.3 and figure 4.1.3 shows that majority of the children 17 (56.67%) of both experimental and control group were females and only 13 (43.33%) children in both experimental and control group were males.

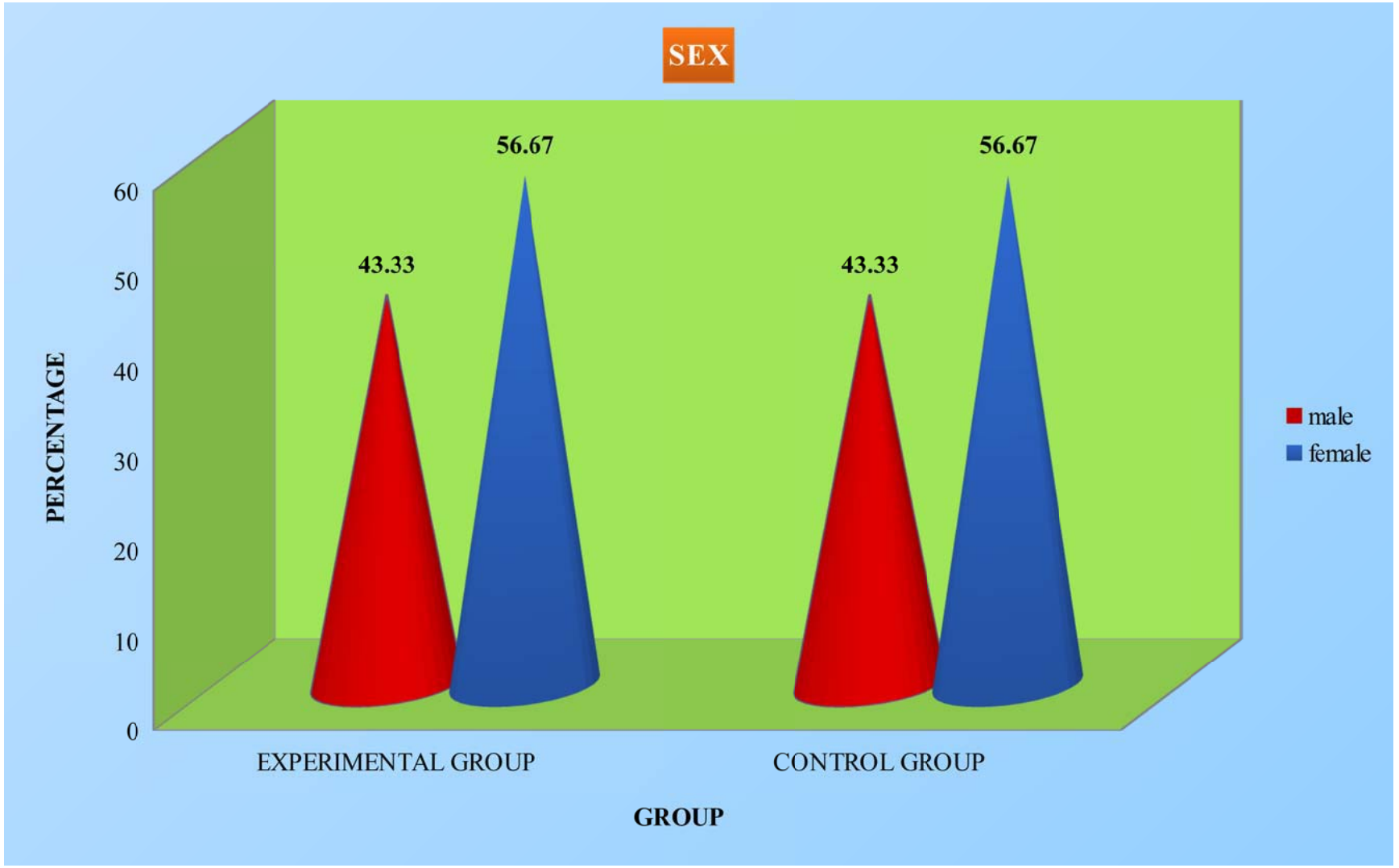


Figure 4.1.3. Distribution of children according to sex.

Table 4.1.4 History of intravenous cannula insertion in previous hospitalization.

N = 60

History of intravenous cannula insertion in previous hospitalization	Group				Total	
	Experimental		Control		Number	Percentage
	Number	Percentage	Number	Percentage		
Yes	13	43.33	18	60	31	51.67
No	17	56.67	12	40	29	48.33
Total	30	100	30	100	60	100

Table 4.1.4 and figure 4.1.4 shows that majority of the children in the control group 18(60%) were experienced intravenous cannula insertion in previous hospitalization but in experimental group the same was only 13 (43.33%). About 17(56.67%) children in the experimental group does not have any history of intravenous cannula insertion in previous hospitalization but only12 (40%) in control group.

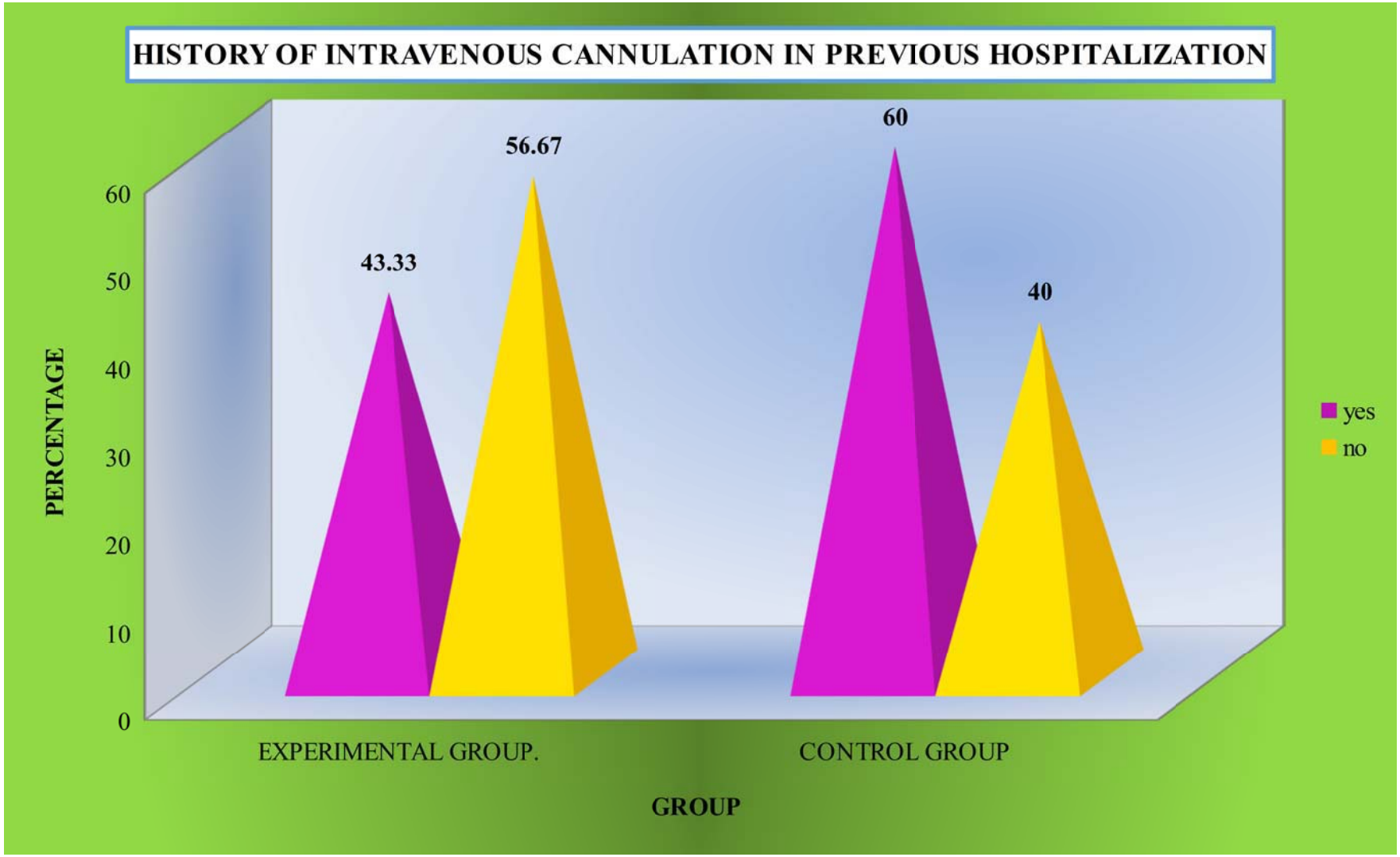

HISTORY OF INTRAVENOUS CANNULATION IN PREVIOUS HOSPITALIZATION
PERCENTAGE
60
50
40
30
20
10
0
43.33
56.67
60
40
yes
no
EXPERIMENTAL GROUP.
CONTROL GROUP
GROUP

Figure 4.1.4. Distribution of children according to the history of intravenous cannula insertion in previous hospitalization.

Table 4.1.5 Distribution according to the history of use of any pain relief measure before intravenous cannula insertion in previous hospitalization.

N = 60

History of use of any pain relief measure before cannulation.	Group				Total	
	Experimental		Control		Number	Percentage
	Number	Percentage	Number	Percentage		
Yes	2	0.067	3	10	5	0.083
No	28	93.33	27	90	55	91.67
TOTAL	30	100	30	100	60	100

Table 4.1.5. and figure 4.1.5. shows that majority of the children in the experimental group 28 (93.33%) and 27(90%) in control group does not receive any pain relief measure before intravenous cannula insertion in previous hospitalization. Only 2 (0.067%) children in the experimental group and 3 (30%) in the control group received some pain relief measure before intravenous cannulation.

HISTORY OF USE OF ANY PAIN RELIEF MEASURE BEFORE INTRAVENOUS CANNULA INSERTION IN PREVIOUS HOSPITALIZATION.

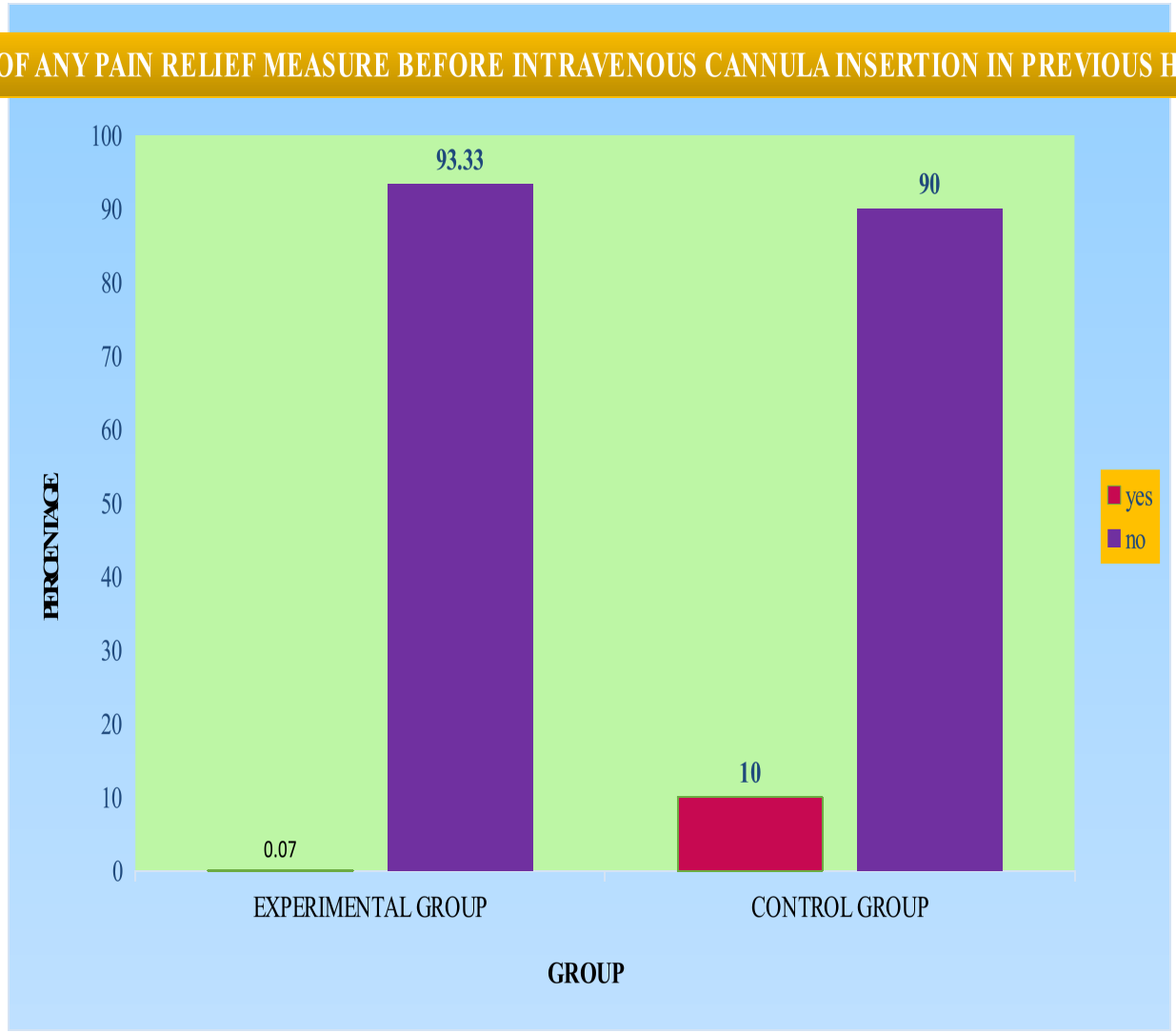


Figure 4.1.5 Distribution according to the history of use of any pain relief measure before intravenous cannula insertion in previous hospitalization.

Table 4.1.6 Distribution of children according to the size of cannula.

N = 60

Size of cannula	Group				Total	
	Experimental		Control		Number	Percentage
	Number	Percentage	Number	Percentage		
24g	11	36.67	13	43.33	24	40
22g	9	30	13	43.33	22	36.67
20g	10	33.33	4	13.34	14	23.33
Total	30	100	30	100	60	100

Table 4.1.6 and figure 4.1.6 showes that 11 (36.67%) children in the experimental and 13 (43.33%) in the control group were inserted with 24G cannula.About 9(30 %) in the experimental group and 13(43.33%) in the control group were inserted with 22G cannula and only 10(33.33%) and 4(13.34%) respectively were inserted with 20G cannula.

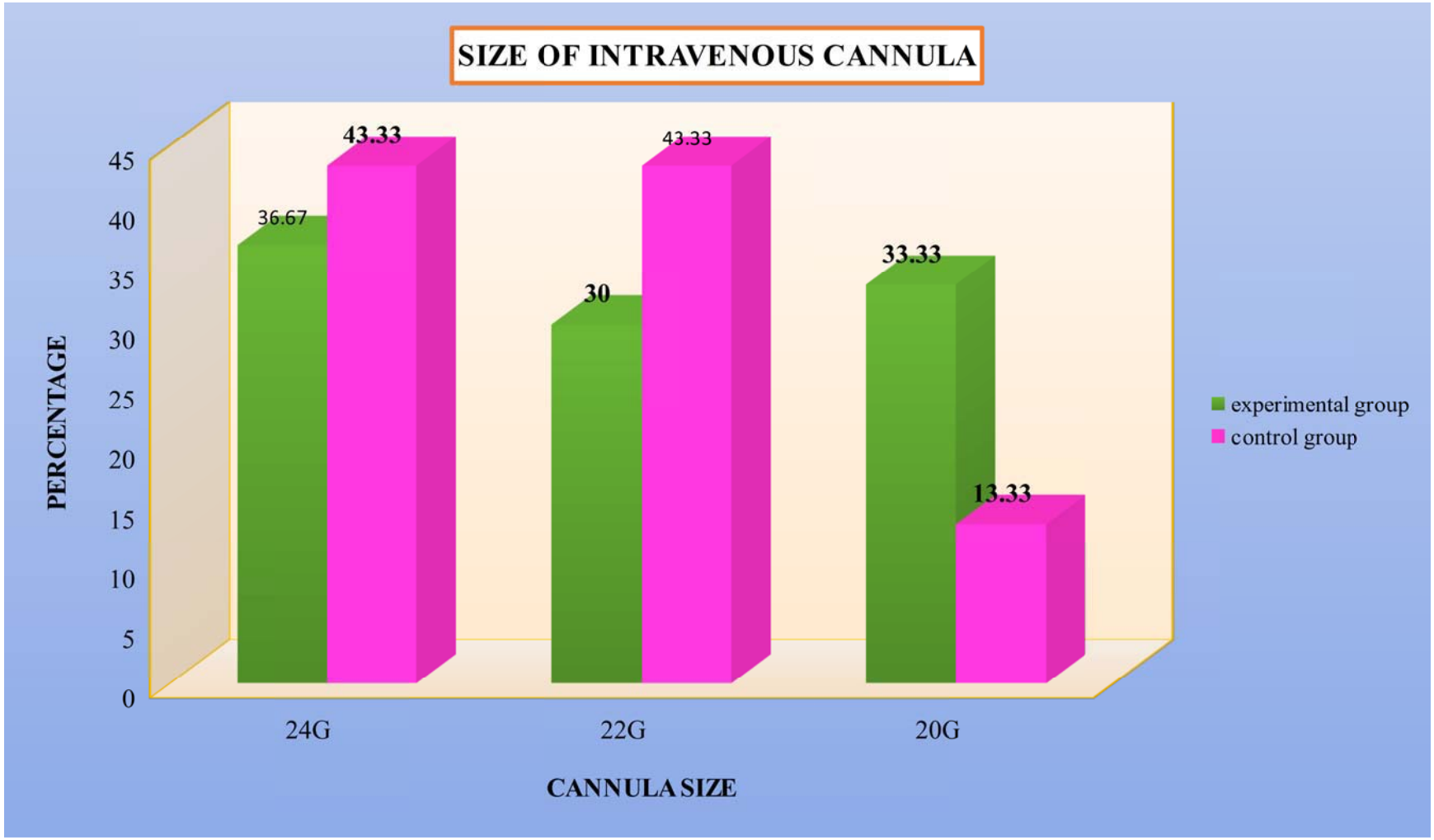


Figure 4.1.6. Distribution of children according to the size of cannula.

SECTION II

ASSESSMENT OF POST TEST LEVEL OF PAIN IN THE CONTROL GROUP.

Table 4.2.1 Post test level of pain response of children in the control group.

N= 30

Pain score	Number	Percentage
Mild (1-3) Moderate (4-6) Severe (7-10)	0 5 25	0 16.67 83.33
Total	30	100

Table 4.2.1 and figure 4.2.1 shows the posttest level of pain of children in the control group. Majority of children in the control group 25 (83.33%) experienced severe pain. 5 (16.67%) experienced moderate pain and none of them experienced mild pain during intravenous cannula insertion.

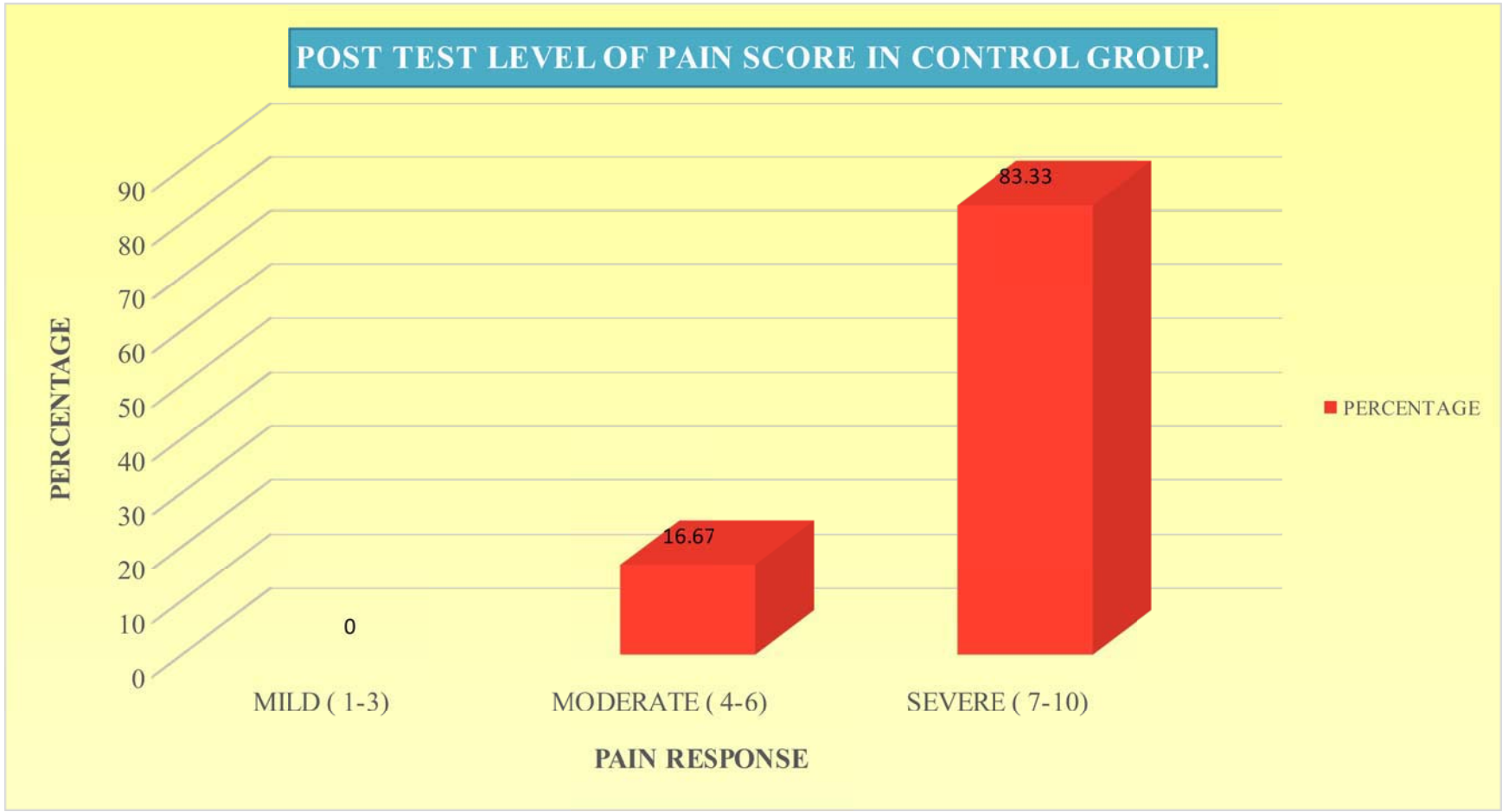


Figure 4.2.1. Post test level of pain response in children of the control group.

Table 4.2.2. Post test mean pain score of children in the control group.

Aspect	Max. score	Range score.	Pain score of the children		
			mean	Mean %	SD
Pain score	10	6-9	7.33	73.33	0.9775

The table 4.2.2 shows the mean pain score of children during intravenous cannula insertion in control group was found to be 7.33 (73.33%) with standard deviation 0.9775.

SECTION III

ASSESSMENT OF PAIN RESPONSE OF CHILDREN IN THE EXPERIMENTAL GROUP DURING INTRAVNOUS CANNULA INSERTION AFTER ADMINISTRATION OF LOCAL COLD APPLICATION.

Table 4.3.1. Posttest level of pain response of children in the experimental group after administration of local cold application.

N = 30

Pain score	Number	Percentage
Mild (1-3)	10	33.33
Moderate (4-6)	20	66.67
Severe(7-10)	0	0
Total	30	100

Table 4.3.1 and figure 4.3.1 shows the post test level of pain in children of the experimental

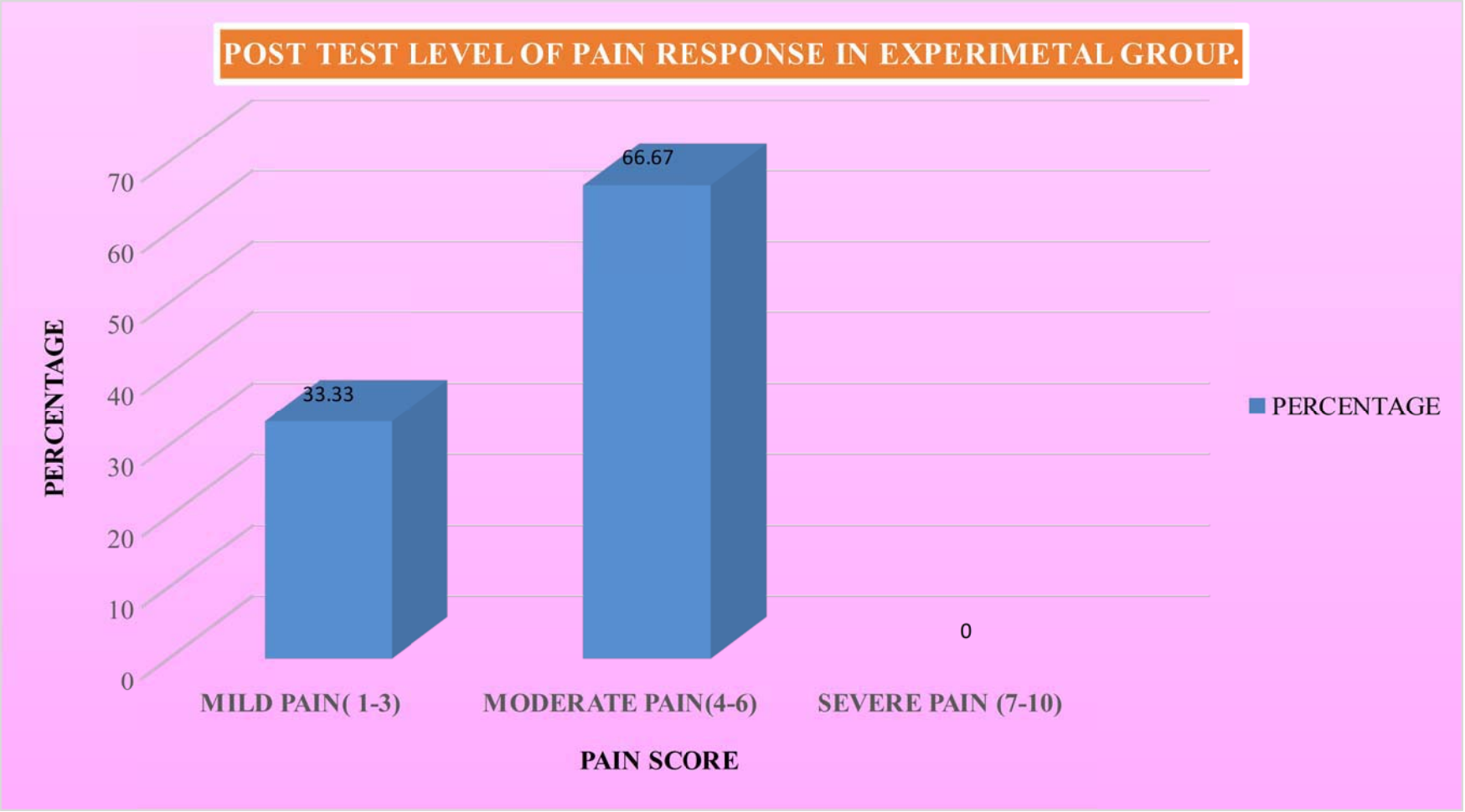


Figure 4.3.1. Post test level of pain response in children of the experimental group after administration of local cold application.

Table 4.3.2. Post test mean pain scores of children in the experimental group.

Aspects	Max score	Range score	Pain score of children		
			Mean	Mean%	SD
Pain score	10	3-6	4.03	40.33	0.9481

Table 4.3.2 shows that the mean pain score of children in the experimental group is found to be 4.03 (40.33%) with standard deviation 0.9481

SECTION IV

COMPARISON OF POST TEST LEVEL OF PAIN SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUP.

This part of the report deals with the analysis and interpretation of the data collected to evaluate the effectiveness of local cold application on pain response during intravenous cannula insertion among children.

This is organized into two sub heading.

A. **Description and comparison of pain scores between the children in the experimental and control group.**

B. **Testing of research hypothesis.**

A. DESCRIPTION AND COMPARISON OF PAIN SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUP.

Table 4.4.1 Comparison of post test level of pain response during intravenous cannula insertion between experimental and control group.

N = 60

Pain score	Group				Total	
	Experimental		Control		Number	Percentage
	Number	Percentage	Number	Percentage		
Mild (1-3)	10	33.33	0	0	10	16.67
Moderate (4-6)	20	66.67	5	16.67	25	41.67
Severe (7-10)	0	0	25	83.33	25	41.67
Total	30	100	30	100	60	100

Table 4.4.1 and figure 4.4.1 depicts that majority of children in the control group 25 (83.33%) experienced severe pain but none of them in the experimental group experienced severe pain. Majority of children in the experimental group 20 (66.67%)experienced moderate pain but in control group only 5 (16.67 %) None of the children in the control group experienced mild pain,but 10 (33.33%) children in the experimental group experienced mild pain.

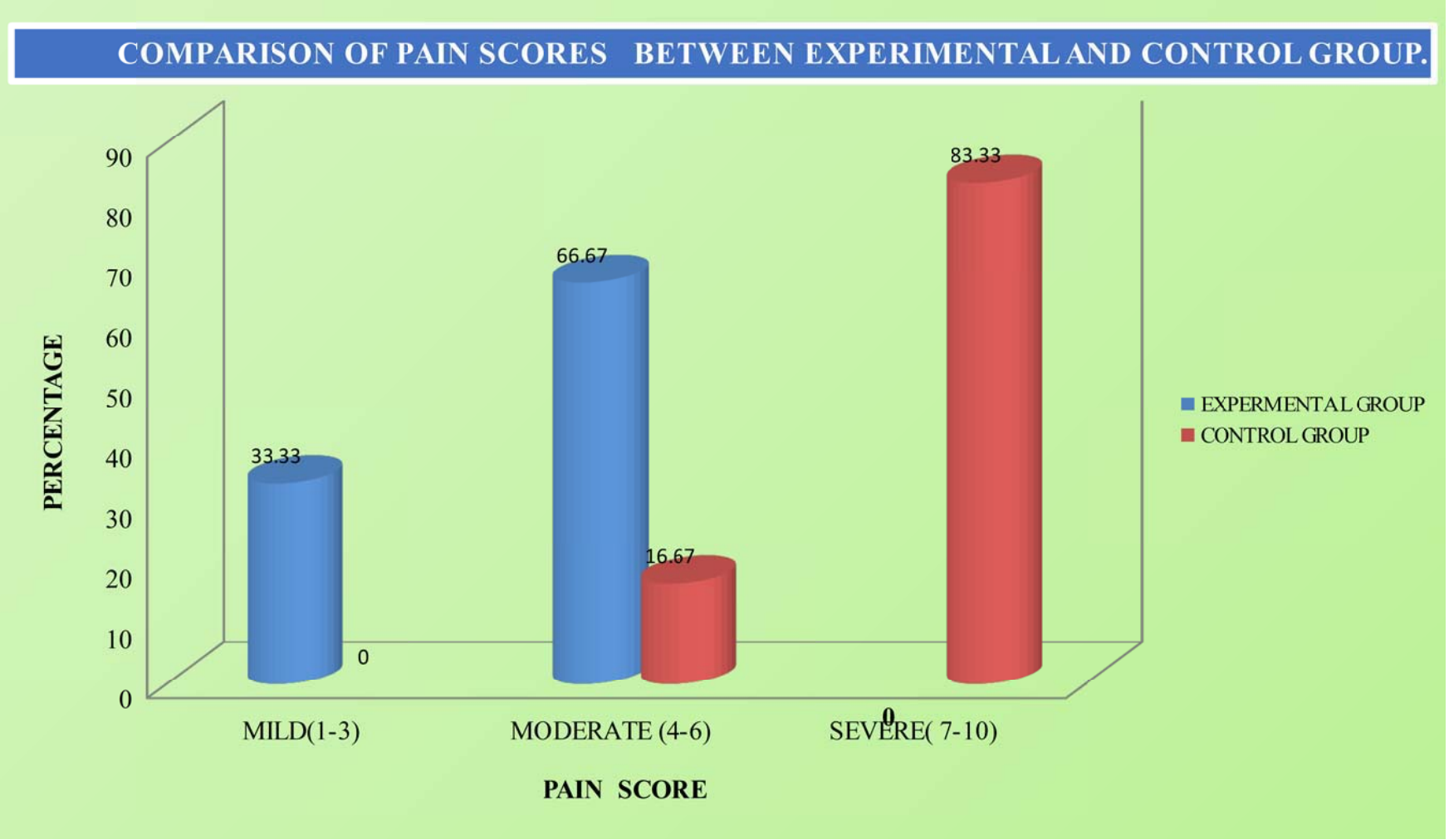


Figure 4.4.1 Comparison of posttest level of pain response during intravenous cannula insertion between experimental group and control group.

Table 4.4.2. Mean, standard deviation, range and mean score percentage of pain score between experimental and control group.

Group	Variable	Maximum possible score	Mean	SD	Range	Mean Score%
Expeimental group	Pain score	10	4.03	0.9481	3-6	40.33
Control group	Pain score	10	7.33	0.9775	5-9	73.33

Table 4.4.2 and figure 4.4.2 compare the mean pain scores between the experimental and control group. The mean pain score 7.33 with standard deviation 0.9775 in the control group decreased to mean pain score 4.03 with standard deviation 0.9481 in experimental group. The mean pain score percentage also decreased from 73.33% to 40.33%. It showed a decrease in the pain level during intravenous cannula insertion after administration of local cold application.

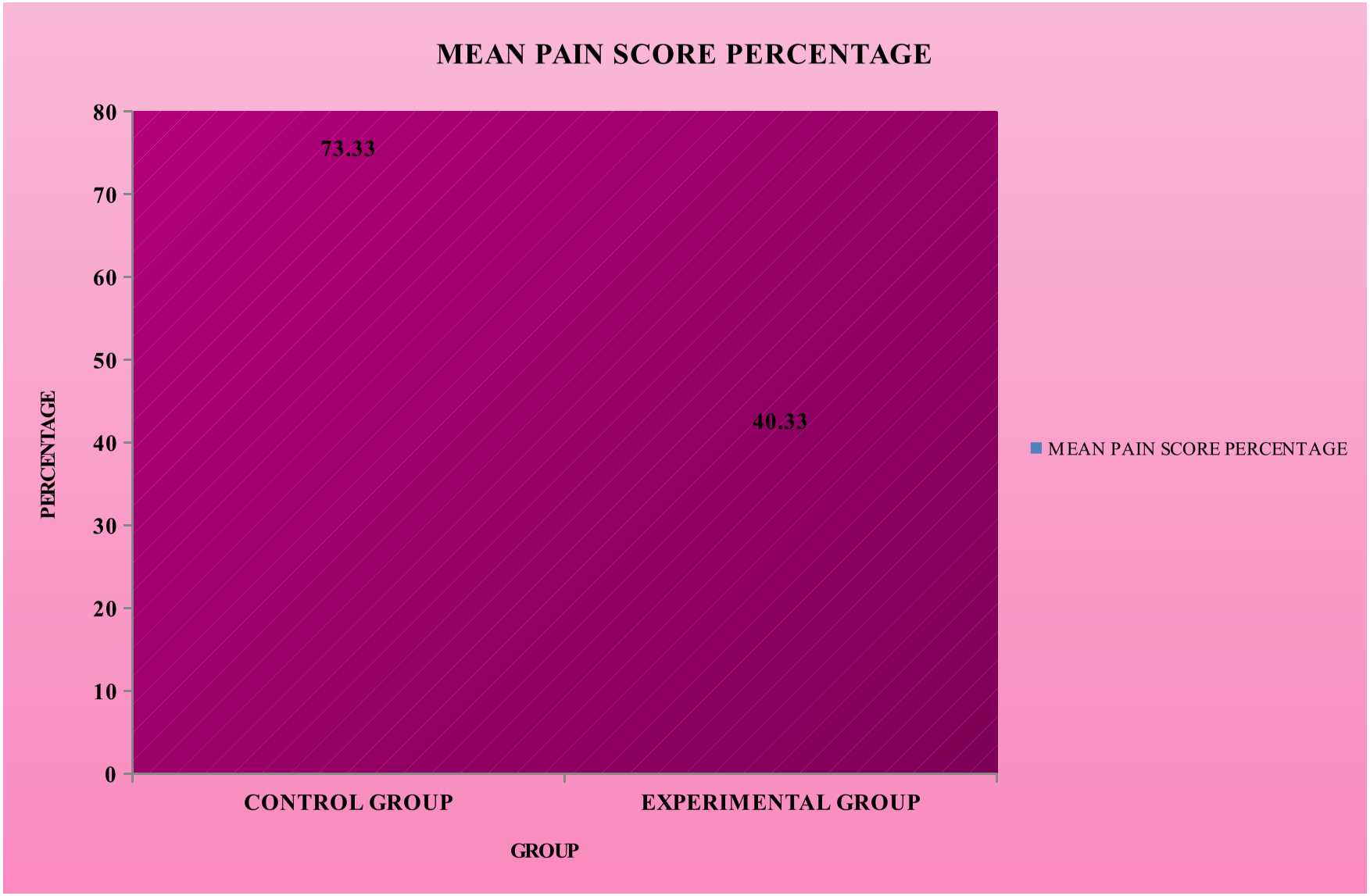

MEAN PAIN SCORE PERCENTAGE
80
70
60
50
40
30
20
10
0
PERCENTAGE
73.33
40.33
CONTROL GROUP
EXPERIMENTAL GROUP
GROUP
MEAN PAIN SCORE PERCENTAGE

Figure 4.4.2 Mean pain score percentage in experimental and control group.

B. TESTING OF HYPOTHESIS.

In order to evaluate the effectiveness of local cold application two research hypothesis were formulated.

Testing of hypothesis I

H_1: There will be a significant difference between the mean pain score of children in the experimental and control group

$H0_1$: There will not be significant difference between the mean pain score of children in the experimental and control group.

Table 4.4.3 Outcomes of unpaired 't' test analysis.

Sl. no	Variables	Difference in mean	't'- value	Df	P-value
1	Pain	3.3	13.038	58* (t= 1.96)	0.05

Table 4.4.3 shows that, in the view of inferring the statistical significance of decrease in the pain response during intravenous cannula insertion after administration of local cold application the unpaired t- test was worked out to compare the difference in pain level between experimental and control group. The difference in mean pain scores between the experimental and control group was observed to be 3.3, which was statistically significant (t- value = 13.038, df = 58) at 0.05 level. This statistical support indicates that the research hypothesis is accepted and null hypothesis is rejected.

ASSOCIATION OF SELECTED DEMOGRAPHIC VARIABLES AND PAIN SCORE OF CHILDREN IN THE EXPERIMENTAL GROUP.

In this section the researcher is interested to bring out the association between pain score of children in the experimental group and selected socio demographic variables like age, weight, sex, history of intravenous cannula insertion in previous hospitalization, history of use of any pain relief measure before intravenous cannula insertion, and size of the cannula.

Testing of hypothesis 2

H_2: There will be significant association between pain reduction and selected demographic variables like age, sex, weight etc in the experimental group.

$H0_2$: There will be not be significant association between pain reduction and selected demographic variables like age, sex, weight etc in the experimental group.

sl.no	Variables	Category	pain score				Chisquare value	Results
			Mild		Moderate			
			NO	%	NO	%		
1	Age	6-8 years 9-10 years 11-12 years	0 4 6	0 13.3 20	16 3 1	53.3 10 3.33	18.45*	**Significant** Df=2 (t=5.99)
2	Weight	Up to 20kg. 21-40 kg. >40 kg.	1 6 4	3.33 20 13.3	14 5 0	46.7 16.7 0	14.24*	**Significant** Df=2 (t=5.99)
3	Sex	Male Female	9 1	30 3.33	4 16	13.3 53.3	13.31*	**Significant** Df= 1 (t=3.84)
4	History of intravenous cannula insertion	Yes No	0 10	0 33.3	13 7	21.7 23.3	11.47*	**Significant** Df=1 (t=3.84)

	History of use of	Yes	1	3.33	1	3.33		

6	Cannula size	24G 22G 20G	1 6 3	3.33 20 10	10 3 7	33.3 10 23.3	7.46*	**Significant** Df=2 (t=5.99)

The table 4.5.1 presents substantive summary of chi- square analysis which was used to bring the relationship between post test level of pain and selected socio demographic variables in the experimental group.

The variables age, weight, sex, history of intravenous cannula insertion in previous hospitalization were found to be significantly associated with pain response of children in the experimental group during intravenous cannula insertion. Hense accept the research hypothesis and reject null hypothesis.

The children who were between 6-8 years 16(53.33%), all of them experienced moderate pain and none of them experienced mild pain. Children between 9-10 years, 7(23.3%), 4 (13.3) of them experienced mild pain and 3 (10) experienced moderate pain. About 7 (23.33) children under the age group of 11-12 years ,6(20) of them experienced mild pain only 1 (3.33) experienced moderate pain. The chi-square test value for association between age and pain response was 18.45 which is significant (p,0.05, 2df = 5.99). It was inferred that there is a significant association between age and pain response during intravenous cannula insertion.

Among 15 (50)the children who were under less than 20 kg, 14 (46.7) experienced moderate pain, only 1(3.33) experienced mild pain. 11 (36.67) children under 21-40kg 6 (20) were experienced mild pain and 5(16.7) were experienced moderate pain. 4 children above 40 kg, all

Among 13 (43.33) male children 9 (30) experienced mild pain, only 4(13.3) of them experienced moderate pain. Among 17 (56.67) female children, 16 (53.3) of them experienced moderate pain only 1(3.33) experienced mild pain. The chi-square test value for association between sex and pain response is 13.31 was significant (p 0.05, 1df= 3.84). It is inferred that there is significant association between sex of the child and pain response during intravenous cannula insertion.

Among 13(43.33) children who are undergone intravenous cannula insertion in previous hospitalization, all of them experienced moderate pain and none of them experienced mild pain. Among 17 (56.67) who don't have any previous history of intravenous cannula insertion 10(33.3) of them experienced mild pain. Only 7(23.3) of them experienced moderate pain. The chi-square test value for association between history of intravenous cannula insertion and pain response is 11.47 was significant (p 0.05, 1df= 3.84). It is inferred that there is significant association between history of intravenous cannula insertion in previous hospitalization and pain response during intravenous cannula insertion.

Among 2(6.67) children who had history of use of any pain relief measure before intravenous cannula insertion , 1(3.33) experienced mild pain, and 1(3.33) experienced moderate pain. Among 28(93.33) who don't have any history of use of any pain relief measure before intravenous cannula insertion, 19(63.33) experienced moderate pain, only 9(30) experienced mild pain. The chi-square test value for association between history of use of any pain relief measure before intravenous cannula insertion and pain response is 0.27 was not significant (p 0.05, 1df= 3.84). It is inferred that there is no significant association between history of use of any pain relief measure before intravenous cannula insertion in previous hospitalization and pain response during intravenous cannula insertion.

About 11(36.67) children who had undergone intravenous cannula insertion with 24G cannula, 1(3.33) experienced mild pain, and 10 (33.3) experienced moderate pain. Among 9(30)

is significant association between size of the cannula and pain response during intravenous cannula insertion.

DISCUSSION

The purpose of this study was to find out the effectiveness of local cold application on pain relief during intravenous cannula insertion.

The discussion is organized under the following headings.

- Socio demographic variables.
- Analysis of effectiveness of local cold application on pain relief during intravenous cannula insertion.
- Association between post test pain score in the experimental group and selected demographic variables.

Description of sociodemographic variables.

- In the present study out of 60 children 31(51.67%) belongs to the age group of 6-8 years. This shows that majority of the children in the study comes under the group of 6-8 years.
- In the present study out of 60 children 27(45%) belongs to the category upto 20 kilograms. This shows that majority of the children in the study weighs upto 20 kilograms.
- In the present study out of 60 children 34(56.67%) were females. This shows that majority of the children in the study are females.
- In the present study out of 60 children 31(51.67%) had history of intravenous cannula insertion in previous hospitalization. This shows that majority of the children in the study experienced intravenous cannula insertion in previous hospitalization.
- In the present study out of 60 children 55(91.6%) did not receive any pain relief measure before intravenous cannula insertion in previous hospitalization. This shows that majority of the children in the study did not receive pain relief measure before intravenous cannula

Analysis of effectiveness of local cold application on pain relief during intravenous cannula insertion.

3. **Assessment of post test level of pain score in experimental and control group.**

In experimental group among 30 children , 10(33.33%) were experienced mild pain, 20 (66.67%) were experienced moderate pain and none of them experienced severe pain. But in control group among 30 majority of children 25(83.33%) experienced severe pain, 5(16.67%) experienced moderate pain but none of them experienced mild pain.

4. **Comparison of post test level of pain between experimental and control group.**

In experimental group the mean pain score is 4.03, mean percentage is 40.33% and standard deviation is 0.95. In control group the mean pain score is 7.33, mean percentage is 73.3% and standard deviation is 0.98. The t value is 13.04 (p =0 .05, 58 df= 1.96) which is statistically significant.

Association between post test pain score in the experimental group with selected socio demographic variables.

Chi-square test was used to find out the association between the socio demographic variables and post test level of pain. It was concluded that age, weight, sex, history of intravenous cannula insertion in previous hospitalization , and size of the cannula were significant at 5% level, but history of use of any pain relief measure before intravenous cannula insertion was not significant.

SUMMARY

This chapter dealt with analysis and interpretation of data collected from 60 children. The

SUMMARY, FINDINGS, CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, IMPLICATIONS AND

SUMMARY OF THE STUDY

The main aim of the study was to evaluate the effectiveness of local cold application on pain response during intravenous cannula insertion.

OBJECTIVES OF THE STUDY

- To assess the level of pain during intra venous cannula insertion among children in control group.
- To evaluate the effectiveness of local cold application on pain response during intra venous cannula insertion among the children in the experimental group.
- To compare the level of pain scores between experimental and control group.
- To find out the association between pain level and selected demographic variables like age, sex, weight etc in the experimental group.

HYPOTHESIS.

H_1: There will be a significant difference between the mean pain score of children in the experimental and control group

H_2: There will be significant association between pain reduction and selected demographic variables like age, sex, weight etc in the experimental group.

The conceptual frame work adopted for this study was Ottawa model of research use, which addresses the implementation of existing research knowledge.

The review of literature helped the investigator to develop conceptual frame work, determine the methodology for the study, and plan for analysis of the data in the most effective and efficient way.

In the present study the investigator test the relationship between independent and dependent variables, the independent variable is local cold application and dependent variable is pain response during intravenous cannula insertion.

The study was conducted in Government District Headquarters Hospital, Namakkal, Tamilnadu. Purposive sampling was used to select the sample. After that samples were equally divided as experimental and control group. The samples consisted of 30 experimental and 30 control group children .

The tool used for data collection was semi structured interview schedule. It has two sections. Section I consist of 6 items of socio demographic variables. Section II consists of **REVISED FLACC BEHAVIOR PAIN SCALE** to assess the pain response of children during intravenous cannula insertion.

The pilot study was conducted during May 4.05.2015 to 6.05.2015 in Government Hospital, Tiruchengode. 6 samples were selected using nonprobability purposive sampling technique. 3 samples were in experimental group and three were in control group. Confidentiality was assured to the subjects. The tool was administered to 6 children. Local cold application was administered to the children in the experimental group. The reliability of the tool was r= 0.92 established by inter rater reliability. The instrument was found to be reliable to conduct the study. The purpose of the study were

- To find out the feasibility of conducting final study.
- To determine the method of statistical analysis.
- To test the tool.

The final study was conducted from 1.06.2.015 to 30.06.2015 in Government District Head Quarters Hospital, Namakkal. Purposive sampling was done. After that intervention was given to experimental group only.

The experimental group the minimum pain score was 3 and maximum pain score was 6 where in control group the minimum pain score was 5 and maximum pain score was 9.

MAJOR FINDINGS OF THE STUDY

Major findings of the study are summarized as follows.

1.Findings related to socio demographic variables.

- Nearly above half percentage 31(51.67%) of sample belongs to the age group of 6-8 years.
- Majority of children 27(45%) belongs to the category upto 20 kilograms.
- Most of the children 34(56.67%) were females.
- About 31(51.67%) children had history of intravenous cannula insertion in previous hospitalization.
- Majority of children 55(91.6%) did not receive any pain relief measure before intravenous cannula insertion in previous hospitalization.
- About 24(40%) are cannulated with 24G cannula.

2. Analysis of effectiveness of local cold application on pain relief during intravenous cannula insertion.

a. Assessment of posttest level of pain score in experimental and control group.

The study revealed that in experimental group among 30 children, 10(33.33%) were experienced mild pain, 20(66.67%) were experienced moderate pain and none of them experienced severe pain. But in control group among 30 majority of children 25(83.33%) experienced severe pain, 5(16.67%) experienced moderate pain but none of them experienced mild pain.

b. Comparison of posttest level of pain between experimental and control group.

3. Association between post test pain score in the experimental group with selected socio demographic variables.

Chi-square test was used to find out the association between the socio demographic variables and posttest level of pain. It was concluded that age, weight, sex, history of intravenous cannula insertion in previous hospitalization , and size of the cannula were significant at 5% level, but history of use of any pain relief measure before intravenous cannula insertion was not significant.

CONCLUSION

Based on the findings of the study the following conclusions were drawn. About 25(83.33%) children in the control group experienced severe pain while intravenous cannula insertion but none of them in the control group experienced severe pain. It shows the evidence that local cold application is effective in reducing the pain during intravenous cannula insertion in children.

NURSING IMPLICATIONS.

The present study has got implications in the field of nursing, nursing administration, nursing research and nursing service. The nurse as a health care provider should be able to make significant contributions to decrease the pain of the children during intravenous cannula insertion and hence reduce the needle phobias and sufferings related to the hospitalization

1. Nursing service

- The study highlights the positive effect of nonpharmacological intervention in reducing the pain response during intravenous cannula insertion in children.
- This study allows the provision of research based nursing care.

- This study will help to decrease the pain and sufferings of the young children during hospitalization and avoids the development of psychological problems like needle phobia in future.

2. Nursing administration.

- Nursing administrators should take initiation in creating policies and plans regarding the use of nonpharmacological pain relief measures before invasive procedures.
- The nurse administrators can organize in service education programme for nursing personnel regarding the use of local cold application before intravenous cannula insertion in children.
- Nurse administrators can implement this in nursing practice.
- Nurse administrators should also plan out the pain relief activities in collaboration with other departments like physicians, anesthetists, phlebotomists etc.

3. Nursing education.

- The clinical instructors can use research findings in clinical teaching.
- Nurse educators can teach this as a new technique for pain reduction during intravenous cannula insertion.
- Nursing students should be encouraged to use different pain relief measures before all invasive procedures.

4. Nursing research.

- Similar study can be conducted for other age groups and the results can be compared.
- A similar study can be conducted for a large sample.
- A similar study can be conducted with a self rating pain scale and the results can be compared.
- A similar study can be conducted as a true experimental study.

RECOMMENDATIONS.

In the light of the above study the following recommendations are put forth.

- A similar study can be conducted for a large sample to draw more conclusive generalization.

- A study can be undertaken to find out the roles of nurses to decrease the pain of children during hospitalization.
- A study can be conducted to find out the long term effects of painful procedures in children.

SUMMARY

This chapter had dealt with the summary, major findings of the study, conclusion, implications and recommendations.

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APPENDICES

APPENDIX A

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

From,

Mrs. ASWATHI VENUGOPAL,

II year M.SC Nursing,

Vivekananda college of Nursing,

Elayampalayam.

To,

THE JOINT DIRECTOR,

Government district Headquarters Hospital

Namakkal district.

Respected sir/madam,

Sub: Request permission- Mrs. ASWATHI VENUGOPAL, II year M.Sc (N) Student to collect data for research purpose.

I **Mrs. ASWATHI VENUGOPAL**, II year M.SC Nursing (child health nursing), Vivekananda college of nursing, Elayampalayam have undertaken a thesis on the topic **"A STUDY TO ASSESS THE EFFECTIVENESS OF LOCAL COLD APPLICATION ON**

OBJECTIVES OF THE STUDY

- To assess the level of pain during intra venous cannula insertion among children in control group.
- To evaluate the effectiveness of local cold application on pain response during intra venous cannula insertion among the children in the experimental group.
- To compare the level of pain scores between experimental and control group.
- To find out the association between pain level and selected demographic variables like age, sex, weight etc in the experimental group.

I would request you to kindly grant me permission to the conduct the study in district government headquarters hospital, Namakkal by collection of necessary information related to the study.

Thanking you,

Place:

Date:

Yours sincerely

Mrs. AswathiVenugopal

APPENDIX-B

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY

From,

The joint director

District government headquarters hospital

Namakkal.

SUB: letter granting permission to conduct the study.

It is hereby to inform **Mrs. ASWATHI VENUGOPAL**, II year M.SC Nursing (Child health nursing), Vivekananda college of nursing, Elayampalayam is allowed to conduct the study on the topic **"A STUDY TO ASSESS THE EFFECTIVENESS OF LOCAL COLD APPLICATION ON PAIN RESPONSE DURING INTRAVENOUS CANNULA INSERTION AMONG CHILDREN (6-12YEARS) ADMITTED IN GOVERNMENT DISTRICT HEAD QUARTERS HOSPITAL, NAMAKKAL, TAMILNADU."**, as a part of the academic requirement.

With thanks

Place: Namakkal

Date:

Your's sincerely

The Joint Director

Namakkal

APPENDIX-C

LETTER SEEKING CONSENT FROM THE PARTICIPANTS.

Dear participants

I **Mrs. ASWATHI VENUGOPAL**, II year M.SC Nursing (child health nursing), Vivekananda college of nursing, Elayampalayam, have undertaken a thesis on the topic **"A STUDY TO ASSESS THE EFFECTIVENESS OF LOCAL COLD APPLICATION ON PAIN RESPONSE DURING INTRAVENOUS CANNULA INSERTION AMONG CHILDREN (6-12YEARS) ADMITTED IN GOVERNMENT DISTRICT HEAD QUARTERS HOSPITAL, NAMAKKAL, TAMILNADU."**, as a part of the academic requirement. The information given by you will help me to complete my project study. This is only for educational purpose; the confidentiality will be strictly maintained. Please participate in this programme by answering my questions honestly and state your willingness to participate in this study.

Thanking you

Place: yours sincerely

Date: Mrs. AswathiVenugopal

CONSENT FROM THE PARTICIPANTS

APPENDIX- D

LETTER SEEKING THE EXPERTS OPINION OF THE TOOL

From,

Mrs. ASWATHI VENUGOPAL,

II year M.SC Nursing,

Vivekananda college of Nursing,

Elayampalayam.

To

Through

THE PRINCIPAL

Vivekananda college of nursing,

Elayampalayam.

Subject: Request for content validation of the tool.

Respected sir/ madam,

I **Mrs. ASWATHI VENUGOPAL**, II year M.SC Nursing (child health nursing), Vivekananda college of nursing, Elayampalayam, have undertaken a thesis on the topic **"A**

OBJECTIVES OF THE STUDY

- To assess the level of pain during intra venous cannula insertion among children in control group.
- To evaluate the effectiveness of local cold application on pain response during intra venous cannula insertion among the children in the experimental group.
- To compare the level of pain scores between experimental and control group.
- To find out the association between pain level and selected demographic variables like age, sex, weight etc in the experimental group.

I humbly request you to give me your valuable suggestions regarding the appropriateness of the tool, which I have enclosed. Kindly give your valuable comments on the tool.

I also request you to kindly sign the certificate stating that you have validated the tool, your kind cooperation and your expert judgement will be very much appreciated.

Thanking you

Place: yours faithfully

Date: Mrs. ASWATHI VENUGOPAL

SEMI STRUCTURED INTERVIEW SCHEDULE

APPENDIX E

SEMI STRUCTURED INTERVIEW SCHEDULE.

Section I:- Socio demographic data

1. Age of the child.
1.1 6-8 years.
1.2 9-10 years.
1.3 11-12 years.

2. Weight of the child.
2.1 up to 20kg.
2.2 21-40kg.
2.3 >40 kg.

3. Sex of the child.
3.1 male.
3.2 female.

4. Have you undergone intravenous cannula insertion in previous hospitalization?
4.1 Yes.
4.2 No

5. Whether you received any pain relief measure before intravenous cannula insertion?
5.1 Yes.

5.2 No.

Section II:-Revised FLACC behavior pain scale

Legs	Normal position or relaxed.	Uneasy, restless, tense.	Kicking or legs withdrawn.
Activity	Lying quietly, normal position, moves easily.	Squirming, shifting back and froth, tense.	Arched, rigid or jerking
Cry	No cry(awake or asleep)	Moans or whimpers occasional complaint.	Crying steadily, screms or sobs, frequent complaints.
Consolability	Relaxed	Reassured by occasional touching, hugging, or being talked to, distractible.	Difficult to console or comfort.

SCORING

0= no pain

TAMIL TRANSLATION OF

TOOL

APPENDIX - F

நேர்காணல்

1.1 6 முதல் 8 வயதுவரை
1.2 9 முதல் 10 வயதுவரை
1.3 11 முதல் 12 வயதுவரை

2. குழந்தையின் எடை
   2.1 20 கிலோவுக்குகீழ்
   2.2 21 முதல் 40 கிலோவரை
   2.3 40 கிலோவுக்குமேல்

3. பாலினம்
   3.1 ஆண்
   3.2 பெண்

4. உங்கள் குழந்தைக்கு இதற்குமுன்புநீங்கள் நரம்புவழியாகஊசிசெலுத்துதல் எடுத்துக்கொண்டீர்களா?
   4.1 ஆம்
   4.2 இல்லை

5. உங்கள் குழந்தைக்குநரம்புவழியாகசெலுத்தப்படுகிறஊசிக்குஏதேனும் வலிகுறைக்கஉபகரணிகள் பயன்படுத்தியுள்ளீர்களா?
   5.1 ஆம்
   5.2 இல்லை

6. நரம்புஊசியின் அளவு?
   6.1 24G (மஞ்சள்)
   6.2 22G (நீலம்)
   6.3 20G (இளஞ்சிவப்பு)

APPENDIX-G

EVALUATION CRITERIA CHECK LIST FOR VALIDATION OF TOOL

The expert is requested to go through the content and give your opinion in the column given in the criteria table. If the tool is not meeting the criteria, please give your valuable suggestion in the remarks column:

Sl. No.	CRITERIA	YES	NO	REMARKS
1.	**Baseline Data** The items on the baseline data cover all aspects necessary for the study			
2.	**Revised FLACC behaviour pain scale to assess the pain response of children during intravenous cannula insertion.** ✓ Relevant to the topics of the study ✓ Content organization ✓ Clarity of items used ✓ Scoring system **Any other suggestions**			

APPENDIX-H

CERTIFICATE OF VALIDATION

This is to certify that the

Tool : Consists of two sections which includes

Section I : Socio Demographic variables

Section II : RevisedFLACC behavior pain scale to assess the level of pain during intravenous cannula insertion.

Prepared by **Mrs. ASWATHI VENUGOPAL**, II Year M.Sc Nursing student (Child health Nursing), Vivekanandha College of Nursing, Elayampalayam to be used in her study titled **"A STUDY TO ASSESS THE EFFECTIVENESS OF LOCAL COLD APPLICATION ON PAIN RESPONSE DURING INTRAVENOUS CANNULA INSERTION AMONG CHILDREN (6-12YEARS) ADMITTED IN GOVERNMENT DISTRICT HEAD QUARTERS HOSPITAL, NAMAKKAL, TAMILNADU."**has been validated by me.

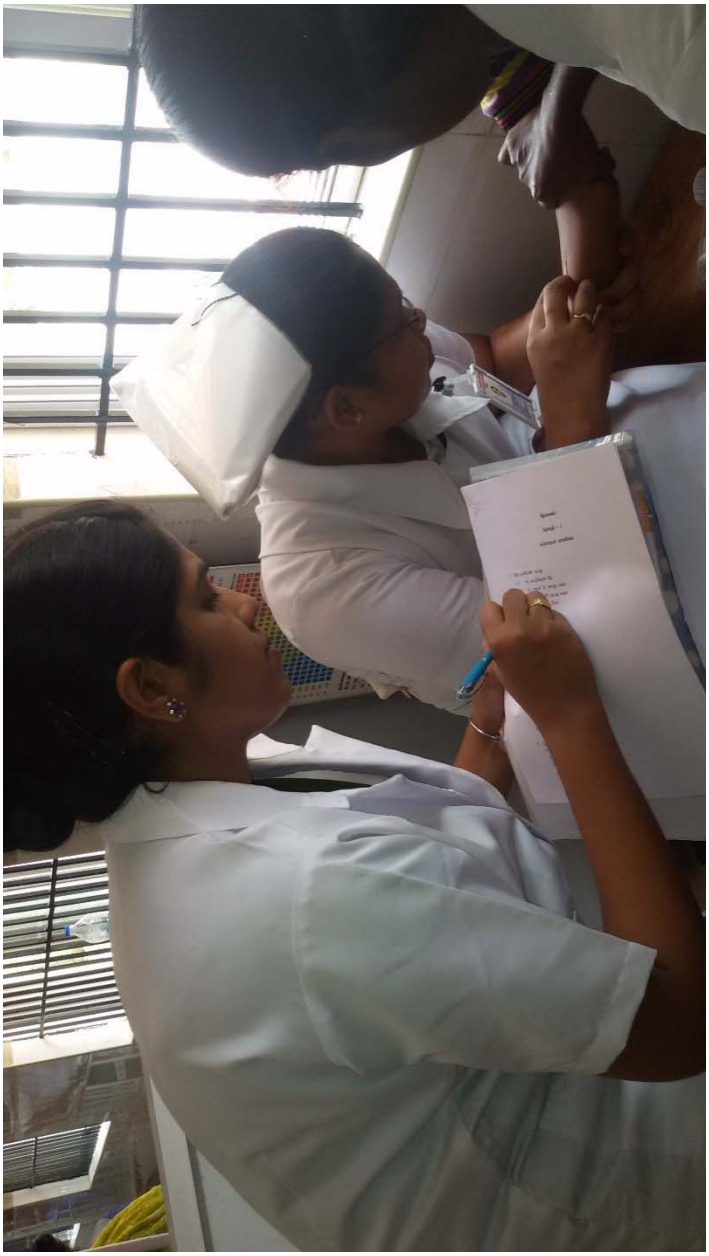
Signature :

Name :

Designation :

Date :

PHOTOGRAPHS.




FEVER